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Learning and Knowledge Processes in an Academic-Management Consulting Research Programme

The Case of the MC Centre

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Abstract

The purpose of this thesis is twofold: to explore learning and knowledge processes in an academic-management consultancy collaborative research programme, and to investigate the enablers and barriers of these processes. The research is driven by an interest in understanding the nature of the divide between academic management research and management practice, the so called 'relevance gap'.

A narrative review of Organisational Learning theory is used to inform and ground the research. In addition, a systematic review on learning and knowledge processes within and across organisations is conducted. From the systematic review, a conceptual framework is derived to guide empirical work. This framework identifies three key classes of enablers and barriers to learning and knowledge processes: 'content', 'practices' and 'people'.

The research design consists of an in-depth, longitudinal single case study with five embedded units of analysis (research projects). The case is explored by means of participant observation, semi-structured interviews, repertory grids and document analysis over a period of five years (2001-2006).

The study identifies a number of paradoxes at individual, group and organisational levels that affect learning and knowledge processes in this case. Among others, a lack of a clearly articulated purpose, unclear mechanisms to exploit research findings, and non-sustained engagement of people help to explain how learning and knowledge failed to occur in some research projects but thrived in others. Purposeful engagement is proposed as an overarching integrative theme to enhance learning and knowledge in academic-management consulting research programmes.

This thesis contributes to theory providing a theoretically-informed, empirically-grounded conceptualisation of enablers and barriers to learning and knowledge processes in academic-management consulting research programmes. This conceptualisation offers new perspectives to dimensionalise the divide between academic management research and management practice, contributing to the relevance gap debate. The thesis contributes to methodology by providing an exemplar of the adoption of an evidence-informed approach to knowledge using systematic review in the management field.

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Doing a PhD is a significant endeavour, and for many an experience that transforms your life. It is said that it may be a lonely journey. In my case, it has been a trip where I met extraordinary people whom I would like to thank for travelling with me.

First and foremost, I would like to thank my supervisor David Denyer for his unfailing support, tolerance and guidance. Over the last five years, he has motivated me with his endless intellectual curiosity, he has always pushed me to go further, and especially, he has nurtured my confidence during the ups but also during the downs of this research. Your exceptional personal qualities, David, have made working with you an incredibly rewarding experience. Thank you so much.

I am deeply grateful to David Tranfield for making available to me just about everything I could wish to have when I came to Cranfield. A fascinating intellectual home, a great group of people to work with, and financial support during my studies. You have been an enormous inspiration to me in the discipline of conducting research and in the art of thinking and 'crafting' ideas. I remember you once said that the best way to accomplish a doctorate is to 'concentrate' on it full time during three years and to get it done. In the course of this research, I got married, I got a full time job, I bought and renewed a house and I had a son. I hope you will forgive me for not following your advice, and for being unable to avoid these life 'distractions'.

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My family gave me a lot more than I could ever give them back. They always supported me, and reinforced my determination to persevere in accomplishing meaningful projects in which I believed. I know you will share with me the immense satisfaction of completing this PhD.

I owe a mention to my son, Ismael, who is still too young to understand what it is to do a PhD, and why it took away much of the time that would otherwise have been for playing with him. Since he was born, he has not been an easy baby to put to sleep, so I think I should read him some of the contents of this thesis to help him to go sleep.

My last and most profound gratitude is to my wife Monica. We met in our last year of college in Lisbon. The question of what to do after graduating was a key concern for us. One day, talking about future plans over dinner she said "why don't we do a PhD?" I said, "yes! why not?" Since then, the doctorate has been one of our shared dreams. Thanks for being part of this dream now close to become true. Thanks for your overriding faith in me, I love you.

Javier Marcos Cuevas

Cranfield, October 2006

Dedicated to my family

Ismael, Monica, Luis, Begoña, y Celso

Preface

In qualitative research, an integral part of the research process is the position of the researcher in relation to the study. Therefore, I would like to present my personal position in this research and share my personal background and approach to this study with the reader beforehand so s/he can more accurately interpret my findings.

This thesis explores the enablers and barriers to learning and knowledge processes in the context of academic-practitioner relationships. This is an area that has attracted my interest since the beginning of my professional life. Before embarking on the 'academic' research of this thesis, I was a human resource development 'practitioner'. In my job, I always felt the need to use academic research to inform my practice. I was always eager to read the literature I could gather on topics related to my role. I always thought that the policies, processes and practices in human resource development I used to work on, would be enhanced if I could relate them to theory. However, the truth is that I did not have much access to academic research, nor did I have time and support to read and use research to inform my practice. My curiosity in management research grew, up to a point of deciding to dedicate a few years of my live to do a PhD in management. During the course of this doctoral study, I have held a deep belief that management research should be used to improve managerial practice.

The other comment I would like to share with the reader is that in this study, I have been extensively and intensely involved in the research setting. I was part of the MCCentre since I started my doctoral studies in September 2001. Over the course of my research, I have experienced excitement and enthusiasm as well as frustration and disappointment. I have got to know the research team at Cranfield very well, and I have spent a lot of time with MCompany's consultants and executives. In cases of close involvement in the research context, the researcher's own experience is considered important and a legitimate source of data. The potential researcher's bias resulting from this involvement is acknowledged and every effort has been made to minimise it. The disadvantage of potential bias is compensated with extensive access provided by a privileged position from which to understand and interpret the findings of this study. Throughout the study, I have tried at all times to find a balance between the objective observation of the facts and the subjective analysis of the plausible mechanisms that underpin those facts.

Outputs and dissemination of research

The following list presents the outputs the author has produced or contributed to in the course of his doctoral research.

Franco, M. and Marcos, J. (2006), 'How Can We Make Iberoamerican Research More Relevant to Practice and Policy Makers?' Paper presented at the *Iberoamerican Academy of Management. Professional Development Workshop. Academy of Management Annual Meeting*, Atlanta, GE. 11-16 August.

Marcos, J. (2002), 'Organisational Characteristics of High Reliability Organisations: An Application of Systematic Review to High Reliability Theory'. Paper presented at the *11th. EDAMBA Summer School*, Soreze, France. 20-25 July.

Marcos, J. (2004), 'Purpusing and Utilising Management Research'. Paper presented at the *British Academy of Management*, St. Andrews, Scotland. 30 August - 1 Sept 2004.

Marcos, J. (2005), 'Knowledge Flows Between Management Research and Management Consulting: Absorptive Capacity and the Utilisation of Research-Based Management Ideas in Knowledge Transfer Projects'. Paper presented at the *International Conference on Organizational Learning and Knowledge*, Trento, Italy. 8-11 June.

Marcos, J., Denyer, D. and Tranfield, D. (2003a), *High Relialibility Organizations: A Systematic Review* (unpublished systematic review), Advanced Management Research Centre. School of Management, Cranfield University.

Marcos, J., Tranfield, D. and Denyer, D. (2002), 'Using Systematic Review in the Management Field: an Example of Its Application to High Reliability Theory'. Paper presented at the *British Academy of Management Annual Meeting*, London, September 9-11.

Marcos, J., Tranfield, D. and Denyer, D. (2003a), 'Organizational and Management Research into Practice: An Evaluation of the Use of Systematic Reviews'. Paper presented at the *European Congress of Work and Organizational Psychology*, Lisbon. 14-17 May.

Marcos, J., Tranfield, D. and Denyer, D. (2003b), 'Management Research into Practice: Exploring Knowledge Transfer and Utilization'. Paper presented at the *Knowledge Management Aston Conference*, Aston, Birmingham. 14-15 July.

Tranfield, D., Denyer, D. and Marcos, J. (2002), 'High Reliability Organisations', *Management Focus. Cranfield School of Management*, No. 19, pp. 16-18.

Tranfield, D., Denyer, D. and Marcos, J. (2003a), 'Knowledge into Practice: The Adoption and Utilization of Management Research'. Paper presented at the *British Academy of Management Annual Conference* , Harrogate, North Yorkshire. 15-17 September.

Tranfield, D., Denyer, D. and Marcos, J. (2003b), 'Synthesising Management Research: The Development of Field Tested and Grounded Technological Rules '. Paper presented at the *British Academy of Management Annual Conference*, Harrogate, North Yorkshire. 15-17 September.

Tranfield, D., Denyer, D. and Marcos, J. (2004), 'Developing an Evidence-Based Approach to Management Consulting'. Paper presented at the *British Academy of Management Annual Conference*, St. Andrews, Scotland, 30 August – 1 September.

Tranfield, D., Denyer, D., Marcos, J. and Burr, M. (2004a), 'Developing an Evidence-Based Approach to Management Consultancy by Using Systematic Review'. Paper presented at the *Academy of Management Annual Conference*, New Orleans, LO. 6-11 August.

Tranfield, D., Denyer, D., Marcos, J. and Burr, M. (2004b), 'Co-Producing Management Knowledge', *Management Decision*, Vol. 42, No. 3, pp. 375-386.

The qualitative analyst owns and is reflective about her or his own voice and perspective; a credible voice conveys authenticity and trustworthiness; complete objectivity being impossible and pure subjectivity undermining credibility, the researcher's focus becomes balance - understanding and depicting the word authentically in all its complexity while being self-analytical, politically aware, and reflexive in consciousness (Patton, 2002, 494-95).

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Glossary and acronyms

MCompany   Refers to the company object of this study. To ensure confidentiality the original name has been concealed.

MPCompany   MCompany merged with PCompany in August 2003 resulting in MPCompany, which is also a fictitious name.

CSoM   Cranfield School of Management

AMRC   Advanced Management Research Centre. The research centre that sponsored and hosted the creation of the MCCentre at CSoM.

MC Centre   Refers to the jointly founded research between MCompany and CSoM

HRO   High reliability organisations. It is the theme of the first research project conducted at the MCCentre. Also known as project 1.

PPP   Public-private partnerships. It is the theme of the second research project conducted at the MCCentre. Also known as project 2.

AssM   Asset Management. It is the theme of the third research project conducted at the MCCentre. Also known as project 3.

PFI   Private-finance initiative. It is the theme of the fourth research project proposed at the MCCentre. Also known as project 4.

BussT   Business transformation. It is the theme of the fifth research project proposed at the MCCentre. Also known as project 5.

HH   H Highways. It is the Highways department of one of MCompany's best client where the HRO research project was implemented

EPSRC   Engineering and Physical Sciences Research Council. UK government's funding bodies

IMRC   Innovative Manufacturing Research Centre. Receives EPSRC funding that distributes later on across the university.

RAE   Research Assessment Exercise

SMoLTA   The Strategic Management of Long Term Assets. First research project of the MCompany-Cranfield collaboration conducted in 2000.

OL   Organisational Learning

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1. INTRODUCTION

1.1. Background and purpose

In 1999 MCompany signed an agreement with Cranfield School of Management to undertake a collaborative research project. Two years later they established the MC Centre, a jointly managed research centre. The aim of the centre was to bring about 'thought leadership' providing MCompany with a means of differentiating itself from its competitors and of maintaining its leading role in the market. The MC Centre had every chance of success. Cranfield School of Management was renowned for its relationship with the business world, and the academics involved had extensive experience of working with organisations. MCompany had recently demonstrated a remarkable capability to reinvent itself, transforming its business from an engineering practice to a broad professional service provider, achieving growth which was extraordinarily profitable for the time. Several committed and enthusiastic consultants and academics worked together to convert the best research in five selected areas of management into novel consulting propositions, and to create a sound platform to promote learning and knowledge across the company.

However, despite these efforts and significant resources only one of five projects was generally acknowledged by the actors involved to have been successful in bringing about learning and knowledge. A second project was recognised as partially successful, a third project largely unsuccessful, a fourth project was abandoned and the last project failed to initiate. In August 2004 MCompany decided to close the MC Centre. There is little doubt about 'what' happened during the lifespan of the MC Centre: critical events were monitored, documents were produced, meetings recorded and all this data systematically archived. However, the people involved in this initiative did not know why only one project was successful while the rest achieved such disparate outcomes.

The overall purpose of this thesis is to understand why the projects of the MC Centre differed so much in bringing about learning and knowledge. This purpose is achieved by comparing the five projects. Through this cross-project comparison, the thesis aims to identify the enablers and barriers to these processes.

The subject area is broad and multifaceted and was initially explored through reviewing the literature on knowledge utilisation and the impact of social science research (Dunn, Dukes et al., 1984; Huberman, 1987; Larsen, 1980; Rich, 1991; Weiss, 1980). This body of knowledge was found valuable but it was not specifically relevant to management research and business organisations. Much of this literature focuses on the utilisation of research in various areas of social policy. In addition, the impact of research was often focused on policy making rather than on managerial decision making. Thus, this literature was limited in helping to explain the learning and knowledge processes in academic-management consulting research programmes.

The literature on research into practice in the medical field, an area known as 'evidence-based practice' (Hamer and Collinson, 1999; Muir Gray, 1997; Sackett, Rosenberg et al., 1996) also offers insights which can help our understanding of this case. The purpose of evidence-based practice is to integrate the best evidence available in a given field with practitioner judgement and expertise to improve the quality of intervention. Systematic review was developed with the aim of locating, appraising and synthesising the best evidence in a transparent and reproducible manner (Mulrow, 1994). The evidence-based practice approach in medicine has been adapted to the management field in the form of 'evidence-informed management knowledge' (Tranfield, Denyer et al., 2003).

The evidence-informed approach to management knowledge contributes to this research providing a prototype methodology to conduct systematic review. In the management field the use of systematic review is still a developing methodology and an exemplar of it is reported in chapter 4. The reasons for the disparate level of success of the five projects of the MC Centre were still not fully clarified by the contributions of the evidence-based practice literature. This literature focuses on the most effective methods to produce and disseminate research, rather than on how individuals adopt and utilise research in organisations.

The organisational learning and knowledge literatures (see chapters 3 and 4) also help us to understand the way in which individuals engage with and use research in organisations. The systematic review literature on enablers and barriers to learning and knowledge within and across organisations offered a useful conceptual framework to explore why some projects succeeded while others did not.

The next section explains the rationale for this study and why it is an important issue.

1.2. Rationale: the relevance in practice of management research

The rationale for this thesis is the realisation that "academic management research has a serious utilization problem" (Van Aken, 2004 p.219). The concern among management scholars about the lack of utilisation of management research is evidenced in presidential addresses and key notes speakers at both the British Academy of Management (Bartunek, 2002; Huff, 2002) and the American Academy of Management (Hambrick, 1994) annual meetings. The themes of these conferences over the last three years are suggestive: "Knowledge into Practice" at the British Academy of Management (BAM) 2003, "Creating Actionable Knowledge" at the Academy of Management (AoM) 2004 and "Knowledge, Action and the Public Concern" at the AoM 2006. Similarly, special issues of several high impact management journals have provided a platform for this current debate (see British Journal of Management 2001, vol. 12 - special issue- and Academy of Management Journal 2001, vol. 44, no. 2). Overall, there is an increasing worry that despite the growing importance of knowledge to organisations in the current economic environment, management research has played a limited role in guiding policy and practice, giving rise to the so-called 'relevance gap' (Starkey and Madan, 2001).

Although the debate is labelled the '*relevance gap*', Den Ouden and Furrer (2003) suggest that four 'gaps' may actually exist. First, a 'content gap' or misalignment

between researchers' objects of interest and practitioners' needs. Second, a 'time lag' from when practitioners' knowledge needs emerge and when the dissemination of academic results takes place. Third is the 'time lead' gap when researchers study fundamental ideas that are far ahead of practitioners' needs. Finally, the 'language gap' where differences in language between researchers and practitioners make research incomprehensible for practitioners.

The 'relevance gap' debate has primarily addressed issues of knowledge creation and dissemination in academic institutions, that is, the *supply* of management knowledge. Conversely, how individuals use management research in organisations, that is, the *demand* for management knowledge, has remained largely overlooked. Tackling the relevance gap in terms of knowledge creation and dissemination seems to be the norm among scholars. Out of the 49 manuscripts submitted to the special issue of the Academy of Management Journal on knowledge transfer between academics and practitioners, 36% were concerned with knowledge creation and 57% with knowledge dissemination (Rynes, Bartunek et al., 2001). Overall, the debate has revolved around five key themes: the nature of management research, the content of management research, the structure of the academic organisations, the way in which management research is disseminated and the academic-practitioner relationship.

Some authors associate the limited influence of management research on practice with conceptualisations of the *nature of management research*, which emphasises a disciplinary or theory focus rather than a transdisciplinary and practice-led view (Tranfield, 2002). Drawing on models of knowledge production proposed by Gibbons et al. (1994), a group of academics (Tranfield and Starkey, 1998) have suggested that management research has usually been conducted in mode 1. Mode 1 refers to knowledge that results almost exclusively from academic research, is structured in disciplines, is primarily cognitive, and follows the conventional validation methods of peer review and academic rigour. According to this group of academics, mode 2 knowledge production offers a potential solution to bridge the relevance gap, emphasising conducting research in the context of application, favouring the co-production of knowledge between academics and practitioners, using a transdisciplinary approach to theory development and joint problem formulation and dissemination.

Much of the *content of management research* is often underused because what scholars publish diverges from what they observe managers doing, reading, and talking about (Lockwood, Keats et al., 1989). The dissemination system of academic knowledge then becomes a system that satisfies no one. Academics' ideas are already in the businesses, and their contributions seldom help practitioners to understand their real problems (Weick, 2001).

The *structure* and *rewards of academic institutions* do not encourage relevant research and divergent goals between academics and practitioners and methods to approach managerial problems make the relevance gap wider (Hyatt, Cropanzano et al., 1997). Academic excellence is often associated with 'academic' output, which emphasises the discovery and integration of knowledge as opposed to its application (Mowday, 1997, p.339). According to Kelemen and Bansal (2002), to bridge the relevance gap academic institutions should redefine the meaning of 'academic' research and encourage researchers to target their work to practitioner requirements, providing theoretical

solutions to practical problems. With few exceptions, most academic journals prioritise specialisation, concreteness and theoretical contributions, rarely stressing the evaluation of relevance and the potential application to practical problems (Crowther and Carter, 2002). Alternative methodological approaches, such as scholarly consulting (Argyris, 1999), or action research (Huxham and Vangen, 1996; Ingelgard, Roth et al., 2002), or co-production of management knowledge (Tranfield, Denyer et al., 2004b), have been presented as being best suited to address practitioner issues.

The *way in which management research is disseminated* poses challenges to its utilisation. The academic language is often difficult to grasp by non-academics (Wilkerson, 1999). Furthermore, academic research tends to employ reflexive analysis and description discourses, when practitioners perceive they need prescription (Starkey and Madan, 2001). Overall, the need for scholars to follow academic writing conventions in order to get published impedes practitioners to fully grasp the essence and practical implications of theoretical insights (Kelemen and Bansal, 2002). These theoretical insights are published in scientific journals which practitioners seldom read, limiting the awareness of existing research among managers and decision-makers.

The *relationships between academics and practitioners* also presents a barrier to the achievement of effective influence of scholarly thought in management practice. Researchers rarely turn to practitioners to gain help in framing research questions, or to help in interpreting and evaluating research results (Ottosson, 2003). A further phenomenon that acts as an important barrier is the stereotyped view held by members of the two communities of each other and the low involvement of practitioners in academic activities. Stakeholders in the management knowledge system (funding bodies, editorial boards and heads of university departments) can also consciously or unconsciously force a drift from 'high-rigour, high-relevance' science towards 'high-rigour, low-relevance' and 'high-relevance, low-rigour' research (Anderson, Herriot et al., 2001). Hyatt and Cropanzano (1997) suggest bringing together practitioners and academics by inviting practitioners to teach in universities, promoting sabbaticals in industry and establishing joint research groups to study specific issues of relevance to practitioner realms. Crowther and Carter (2002) argue for a more productive dialogue between researchers and practitioners drawing on current practice for analysis, synthesis and theorising, and increasing feedback to practice with suggestions for change, with the aim of setting research agendas within the practitioner community.

From the previous discussion it can be argued that the contributions to this debate focus primarily on issues related to the way in which academics create and disseminate knowledge in academic institutions. Aspects such as the nature and content of management research, the structure of the academic organisations and the dissemination channels and styles primarily address the *supply* side of management knowledge. The *demand* side of knowledge, investigating the adoption and utilisation of knowledge, is rarely addressed.

In analysing the demand side of management knowledge, management consultants are identified as key players in the market of management and business ideas. Management consultants play a critical role in demanding (adopting and utilising) management research that they further apply in a variety of organisations and in a wide range of

interventions. The next section briefly describes management consulting to illustrate the broad context where MCompany is embedded.

1.3. The context of the thesis: management consulting

Consultants are major players in the management knowledge market (Engwall and Kipping, 2002; Sahlin-Andersson and Engwall, 2002), having an increasing influence in business organisations (Kennedy Information, 2004). Consultants interact amongst themselves and with academic institutions in a number of ways in search of relevant management knowledge. Business and management schools and consultancies interact, when academics get involved in consulting activities, when graduates go to work in consulting firms and also by means of collaborative projects (Sahlin-Andersson and Engwall, 2002). They also interact in conferences and research 'clubs' or by participating in customised and open learning programmes.

The interplay between management science and management consulting is complex. Some argue that management science, consultancy firms, and business companies are different systems (March, 1991b). Deeply embedded elements, such as criteria for success, and the rhetoric they employ make them dissimilar (Kieser, 2002). For academics, recognition is primarily based on original contributions to knowledge (judged on quality of publications and levels of citation), reputation of their institution and participation in professional associations. On the other hand, consultants are valued by the profitability of their projects for clients and their ability to solve clients' problems. Rhetorical devices also differ significantly. Academics tend to seek (academic) legitimisation by using scientific jargon, extended referencing, complex explanatory models and advanced statistics (McCloskey, 1990; Whitley, 1984). Research findings are frequently contingent, uncertain and inconclusive. These conventions make it difficult for consultants to easily access and use insights from the science base. Consultants tend to use clear messages where a few key factors are emphasised, promising improved performance, and using metaphors and examples extensively (Benders and van Veen, 2001; Kieser, 1997; Rovik, 2002).

The relationship between academics and consultants is critical in the creation and utilisation of management knowledge. The way in which academics and consultants interact can shape management knowledge. As Williams (2004 p.769) argues, "some concepts, techniques and ideas prosper in the marketplace, not because of their economic reproductive capacity, but instead because of their interpersonal reproductive capacity". The case of the collaboration between MCompany and Cranfield School of Management offers an ideal context to explore in depth the 'interpersonal capacity' of management research between academics and consultants.

Management consultancies have been described as 'research translators' (Crucini and Kipping, 2001), 'knowledge brokers' (Alvesson and Johansson, 2002), 'knowledge intensive firms' (Robertson and Hammersley, 2000), and 'knowledge systems' (Werr and Stjernberg, 2003) among others. The common concept across those characterisations is *knowledge* reflecting the fact that consultancies act as key stakeholders in the supply chain of management knowledge. These organisations scan, select, assess, refine and 'pack' management research, new ideas and methods and apply them to clients in all sorts of performance-enhancement interventions. As

consultancies often act as interfaces between academic institutions and industrial/service organisations, they are an exceptional settings to study issues of learning and knowledge processes and their enablers and barriers. The specific characteristics of MCompany as a management consultancy are described in chapter 2.

This thesis is informed by theory as well as being grounded in empirical data. It was not easy to find a suitable theoretical background to inform the case of academic-industry collaboration from a demand perspective to knowledge and learning. In search of a sufficiently robust theoretical foundation, the author conducted a narrative review on Organisational Learning and a systematic review on knowledge within and across organisations, which are briefly explained as follows.

1.4. The theoretical background and conceptual framework

The theoretical background of this thesis is Organisational Learning (OL). In chapter 3, a narrative review of the OL literature is presented. Building on a widely-accepted model of OL (Crossan, Lane et al., 1999) this thesis conceptualises learning as a cognitive, behavioural and social phenomenon that is multi-level and thus occurring at individual, group and organisational level.

The review of the OL literature reveals that learning and knowledge are two concepts that are inextricably linked and often used interchangeably. The OL literature is useful in providing a general understanding of learning processes, but falls short in identifying enablers and barriers to these processes. Thus, a systematic review (chapter 4) of enablers and barriers to knowledge processes within and across organisations was conducted. The systematic review included 107 studies selected from 2,380 potentially relevant sources.

From the systematic review a *conceptual framework* is derived, which classifies enablers and barriers to learning and knowledge processes into three groups: content, practices and people.

- *Content*: refers to the subject theme of the research project, and includes domain (disciplinary area) and focus (the specific issue the project sets out to address).
- *Practices*: refers to the routines, actions and procedures followed to undertake each research project.
- *People*: refers to the MCompany staff (consultants and executives) and Cranfield staff (academics/researchers).

1.5. Overview of research design and methods

The overall research design of this thesis is an *exploratory longitudinal, in-depth, single case study with embedded units of analysis using multiple methods of data collection*.

Qualitative approaches to research are appropriate when context is judged to be relevant and when actors' accounts are important. Within qualitative approaches, case study research is adopted in order to explore the interactions between the phenomenon under investigation and its context, and to provide a detailed description of both phenomenon

and context. Given the evolving feature of knowledge and learning, this study is longitudinal. Recognising the complex and multi-level nature of learning and knowledge processes, this thesis adopts an in-depth exploratory strategy using multiple methods of data collection. The embedded units of analysis are the five research projects conducted within the MC Centre.

According to Yin (2003) the single case study is an appropriate method of enquiry and eminently justifiable when any of the following occur: First, a case that represents a critical one in testing a well-formulated theory; second the case is unique or rare; third, the case is representative of many others; fourth the researcher has extraordinary access to investigate a phenomenon; fifth, the aims of the research are to understand how certain conditions change over time. The case explored in this thesis meets the second, fourth and fifth criteria. The case is rare since it is one of the first exemplars of evidence-informed practice in management studies using systematic reviews; it is a revelatory case, since the author had extensive access to the research context and to its actors; and learning and knowledge processes are considered as phenomena that develop over time, thus a longitudinal single case is appropriate. A justification of the single approach is developed in more detail in chapter 5, as well as the methods of data collection employed. These methods are briefly presented below.

Four methods of data collection are employed: participant observation, semi-structured interviews, repertory grids and document and archival data. Each of these methods is used to explore the different variables in the conceptual framework: content, practices, people. *Participant observation* allows the researchers to study first-hand the behaviour of individuals in particular situations and to explore the 'practices' and 'people dimensions' of learning and knowledge processes. *Interviews* are the most common method of data gathering in qualitative research and given its flexibility as a method is well-suited to a wide range of research purposes. In this thesis, semi-structured interviews were instrumental in capturing evidence about 'content' and 'people' aspects of learning and knowledge processes. *Repertory grid* is a method used to elicit a person's description of an aspect of his/her reality. In this thesis, repertory grid is used to gain a deep understanding of how an individual construes internal representations of management and business ideas; in other words it addresses the 'content' aspect of the conceptual framework. *Archival data, documents, records* and written artefacts constitute a particularly rich source of information about organisations and are used to gather additional evidence on aspects of 'content', 'practices' and 'people'.

1.6. Analytical strategy

The analytical strategy of the empirical data of this thesis is primarily *inductive*, aiming to identify patterns, themes, and categories in the data in a search for plausible explanations of the case (Patton, 2002). This general strategy is complemented by the use of four analytical techniques: case description (Yin, 2003), cross-case comparison (Miles and Huberman, 1994), analysis of the case relying on theoretical propositions and alternative explanations (Yin, 2003), and analysis of associations using mapping techniques (Huff, 1990; Jenkings, 2002).

Firstly, a 'thin' *case description* (Geertz, 1973) is presented to illustrate the context of the study, namely MCompany and Cranfield School of Management, the research centre

(MC Centre), and the five research projects that constitute the units of analysis of this thesis. The aim of the thin description is to provide an account of '*what*' happened in each of the research projects and their context. Secondly, a 'thick' analytical description using empirical data and *theoretical propositions* is used to explore the enablers and barriers to knowledge and leaning processes. The thick description aims to understand '*how*' it happened. Thirdly, the enablers and barriers to learning and knowledge processes that emerge in each project are subject to a *cross project analysis* approach. The aim is to gain a deeper understanding of the critical enablers and barriers to learning and knowledge processes. Finally, a *map of associations* is developed in order to bring together the critical enablers and barriers and to explain '*why*' knowledge and learning occurred in some projects but not in others.

1.7. Expected contributions

This thesis makes a contribution in two areas: to theory and to methodology. It also makes some suggestions to practice and to the practice of conducting management research.

The *theoretical contribution* of this thesis is presented drawing on the criteria that Easterby-Smith, Antonacopoulou et al. (2004) specify for contributions to the Organisational Learning (OL) field. The thesis makes a contribution through linking into and encapsulating an ongoing debate or conversation. It provides a theoretically-informed, empirically-grounded conceptualisation of enablers and barriers to learning and knowledge in academic-management consulting programmes. This conceptualisation offers new perspectives to dimensionalise the relevance gap between academic management research and practice from a 'demand side' perspective.

The thesis puts together streams of work and ideas within the same field which have previously been separate. In particular the thesis brings together the knowledge utilisation and the utilisation of social science research that have remained largely under-cited by organisational learning scholars. The thesis contributes to the OL field integrating different conceptions of knowledge (asset vs. process and process vs. outcome) and shows that the ontological fragmentation within the field can be reconciled. The thesis contributes to the integration of the OL field by proposing 'purposeful engagement' as a key overarching or explanatory theme that combines cognitive, behavioural and social aspects of OL. OL is conceptualised as a result of this research as a purposeful endeavour. It is argued that in order to enhance organisational learning a clear and meaningful purpose (cognition) has to be defined and shared. This facilitates individuals' engagement in practices (behaviour) conductive to the collective (social) co-creation of new knowledge, allowing learning to occur.

The thesis contributes to *methodology* by providing an exemplar of the adoption of an evidence-informed approach to knowledge using systematic review in the management field. In particular, it shows how systematic review can contribute to the synthesis of a highly-fragmented field such as organisational learning and knowledge.

This thesis makes some tentative recommendations to management practice by developing grounded and field-tested 'technological rules' that practitioners can apply

to facilitate the instrumental, conceptual and symbolic use of management research in their practice.

1.8. Research outline

The outline of the thesis is presented below (Figure 1.1). The structure of this thesis is informed by Snook's (2002) research on organisational failure in a military organisation, conducted at Harvard University. In presenting single case study research Snook advocates describing the case early in the thesis. This provides a clearer rationale for the research and facilitates the understanding of the analysis of the case conducted subsequently.

Chapter 1. Introduction.

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Chapter 2. The 'thin' description of the case.

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Chapter 3. Theoretical framework: Organisational Learning.

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Chapter 4. Systematic Review: knowledge processes within and across organisations.

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Chapter 5. Methodology.

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Chapter 6. Findings: analysis of the MC Centre.

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Chapter 7. Findings: analysis of the research projects.

↓

Chapter 8. Cross-project comparison.

↓

Chapter 9. Discussion.

↓

Chapter 10. Conclusion.

Figure 1.1 Outline of the thesis

1.9. Structure of the thesis

This thesis is structured in nine further chapters:

Chapter 2 presents a 'thin' description of the case. This describes the facts, in essence, what happened in the MC Centre using a chronological and cross-level approach. The chronological approach helps the reader 'travel' along the history of the MCompany – Cranfield School of Management collaboration. It goes from the first encounter in December 1999 up to the sign-off of a contract to implement findings from one of the research projects in September 2006, coinciding with the submission of this thesis. The cross-level approach will take the reader across the relevant levels of this study: first, the organisations involved, MCompany and Cranfield School of Management; second, the Research Centre (the MC Centre); third, the five research projects that constitute the units of analysis. Chapter 2 describes the extent to which these projects were successful based on participant's accounts.

Chapter 3 contains the theoretical framework. This framework is derived from a narrative review of the OL literature. A conceptualisation of both learning and knowledge is offered. It is argued that making a clear distinction between learning and knowledge is virtually impossible, since learning and knowledge overlap and are tightly intertwined. Types of learning are described depending on the degree and the nature of change involved. Levels of learning are outlined identifying various relevant levels. Key learning processes are reviewed offering a brief summary of existing literature. The chapter ends by proposing a set of detailed questions to be addressed in the systematic review.

Chapter 4 presents the systematic review on knowledge processes within and across organisations. A detailed methodology of how the review was conducted is reported to enhance transparency and to provide audit trail. A descriptive analysis of the literature is presented showing the richness of the field of organisational knowledge. The thematic analysis provides the basis for deriving the conceptual framework of the study. This conceptual framework comprises content, practices and people. The conceptual framework also contains specific propositions that will be further explored in the empirical work.

Chapter 5 covers the methodology of the thesis. In so doing, the chapter positions the thesis within a realist ontology and justifies in detail all the components of the research design which is an exploratory longitudinal, in-depth single case study with embedded units of analysis using multiple methods of data collection.

Chapter 6 presents a 'thick' description of the MC Centre providing a rich, detailed, and concrete account of the research programme, the people, and the events. Overall, this chapter offers the necessary grounding for the in-depth analysis of the research projects in chapter 7.

Chapter 7 reports the findings from the research projects blending description with explanation as the narration unfolds. The analysis of each project is informed by the conceptual framework.

Chapter 8 outlines the cross-project comparison, focusing on understanding the enablers and barriers of practices, content and people, and how these operate to lead to or prevent the learning and knowledge in each specific project. The cross-project comparison is instrumental in distinguishing the critical enablers and barriers to learning and knowledge processes from the non-critical.

Chapter 9 discusses the findings and the results of the cross-project comparison in the light of theory, building a causal explanation of the case. It discusses the findings in terms of content, practices and people using the conclusions of the reviews of learning and knowledge and other theories and concepts or frameworks to explain why the projects of the MC Centre differed so much in terms of their learning and knowledge outcomes.

Chapter 10 concludes the thesis by summarising the key findings of the study. It is concluded that 'purposeful engagement' lies at the heart of the differences across the projects. This becomes the overarching theme that constitutes the primary contribution to theory of this thesis. Contributions to methodology, management practice and to the practice of conducting management research are also offered. The chapter concludes with the limitations of the study and suggestions for further research.

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2. THE 'THIN' DESCRIPTION OF THE CASE: THE COMPANY, THE CENTRE AND THE RESEARCH PROJECTS

2.1. Introduction

The previous chapter introduced the reader to this thesis. The purpose of this chapter is to present a 'thin' description (Geertz, 1973; Denzin, 2001), that is, a non-analytical account of the context of the research. First, the chapter presents the two organisations involved: MCompany and Cranfield School of Management. The chapter outlines the organisations' recent history, strategic focus and the services they provide. Second, the chapter offers an overall description of how the MC Centre was conceived and founded dividing its history into four key stages. Third, it goes on to explain the areas of research, the people involved and key events of each of the five key projects that form the embedded units of analysis of the case study. This chapter aims to provide sufficient background information to enable a better understanding of the context of the case and '*what* happened'. Later on, chapters 6 and 7 of the thesis will analyse the evidence and will provide a 'thick' description of '*how* and *why* it happened'.

As the reader will appreciate, the overall tone of the chapter will be rather descriptive. Value judgements have been avoided whenever possible, to provide an unbiased description of MCompany, Cranfield School of Management, the MC Centre, and the five research projects. The statements are all based on evidence, and the sources are referenced trying to achieve a balance between rigour and readability. This chapter aims to construct the foundations upon which to build the theoretical explanations later. In some occasions the boundaries between description and explanation may blur. The emphasis of this chapter is on 'what happened' and will shift over the next chapters into 'how' it happened and later on into suggesting 'why' it all may have happened.

Figure 2.1 provides an overview of what happened in three layers. The first layer features the key events at the organisational level (MCompany and Cranfield School of Management). The second depicts the development of the MC Centre. The third layer traces a brief chronology of the research projects. Each subsection of this chapter focuses on each of these layers providing more details of significant events.
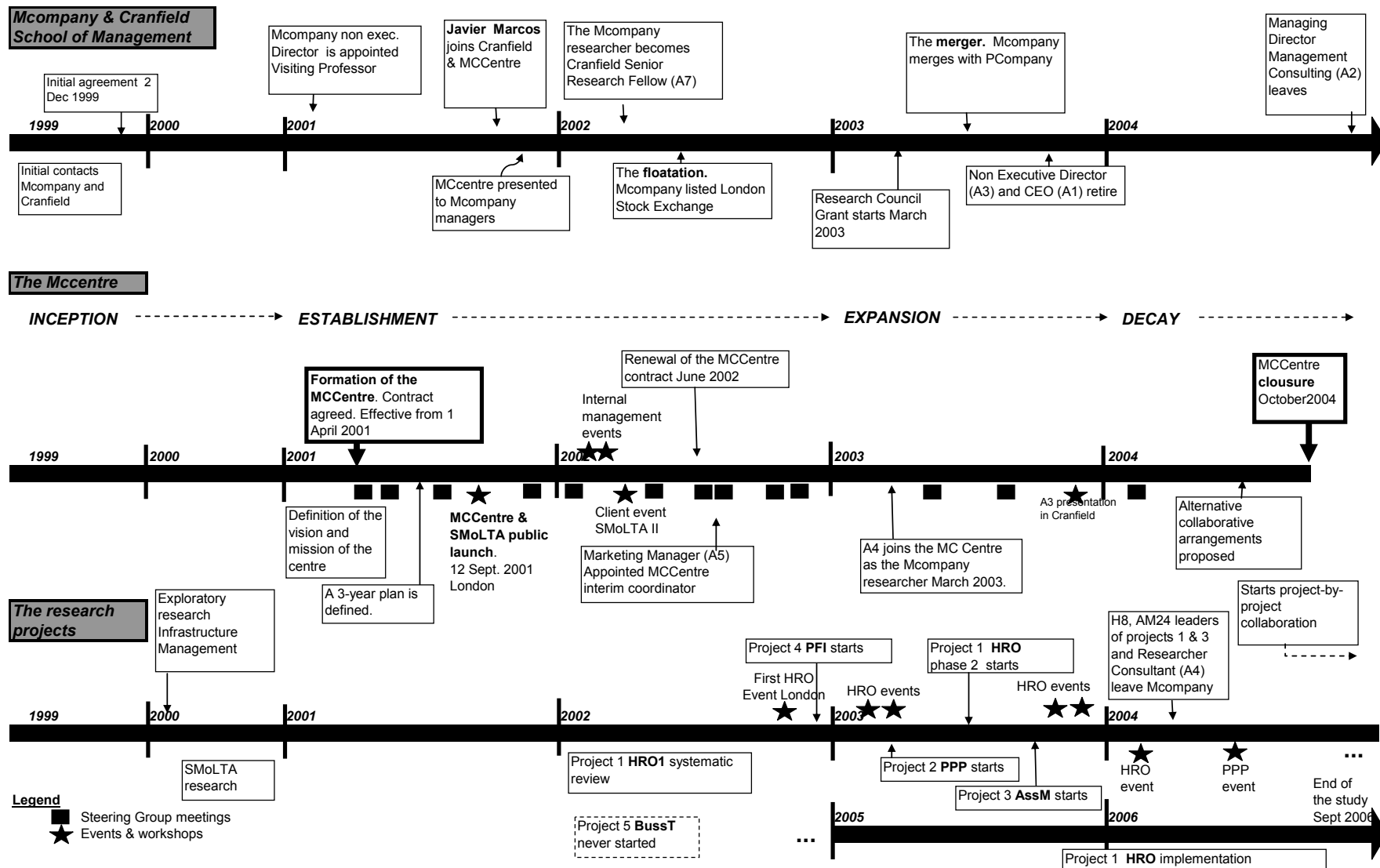
Figure 2.1. Chronological overview of the case study. Source: Compiled by author.

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2.2. The organisations involved: MCompany and Cranfield School of Management

2.2.1. MCompany

2.2.1.1. The early days: from foundation to 1997

The history of MCompany can be traced back to 1897. In that year, the company's founder, a Frenchman, arrived in the UK with a licence to exploit a new technique of reinforcing concrete using iron bars and he subsequently held the UK patent for this technique for the first decade of the 1900s. Over the next 90 years, MCompany progressively grew to become a professional services group providing key private and public clients with a complete asset and infrastructure management service including management consultancy. The general trend towards outsourcing and the UK government's agenda to improve the quality of public services gave MCompany opportunities to grow rapidly between 1990 and 1997. By 1997 MCompany provided public services to more than five million people in local communities across the UK (2002 09 25 MCompany prospectus).

MCompany operates primarily in the following sectors: defence, local government, marine, oil and gas, highways, property and housing, rail, environment, education, waste and water. MCompany's client base comprises leading organisations in their respective fields, both private and public (Annual review 2000-2001). Among MCompany's clients are The Highways Agency, the MoD, Transport for London, London Underground, the Strategic Rail Authority, Railtrack, Hertfordshire County Council, Rochdale County Council, Transco, BT Cellnet, etc. (2001 10 26 Project and Managed services Key Client list)

The first half of the 1990s was marked by severe financial difficulties. At that time, this was one of the messages from one of MCompany's board members:

> "My mantra to everybody when I came to talk to them, we've got two years, we're sticking with that, we've got a six million pound overdraft, we're losing money on job after job after job, the bank is meeting the CEO every week, the only thing that's keeping us afloat is that we've got a damn great headquarters, that's the only collateral we've got on our books, what are we going to do about it. I said well we've got two alternatives, you either get bought out by Americans or … we do something about it. We've got about 18 months to do something about it" (A3, Non-Executive Director, 24/01/2006).

In 1995, the company's share ownership arrangements were restructured to allow a large proportion of shares that were held at that time by retired staff to be placed within an employee share trust. In addition to enabling MCompany current employees to take ownership of the company, this restructuring provided funds to overcome the transitory financial burden (2002 09 25 MCompany prospectus).

In 1997, in a better financial position, MCompany defined a major new strategy focusing on a select number of key clients who own substantial portfolios of infrastructure assets and emphasising long-term relationships. In order to develop and sustain this strategy, MCompany established three business groups: Managed Services, Project Services and

Management Consultancy, enabling them to offer different kinds of services but with high levels of complementarity (Annual review 1999-2000):

- Managed Services – operational management of services under long-term partnership contracts

- Project Services – project management and specialist technical services

- Management Consultancy – strategic infrastructure planning, and management advice. Management consultancy is described in more detail below.
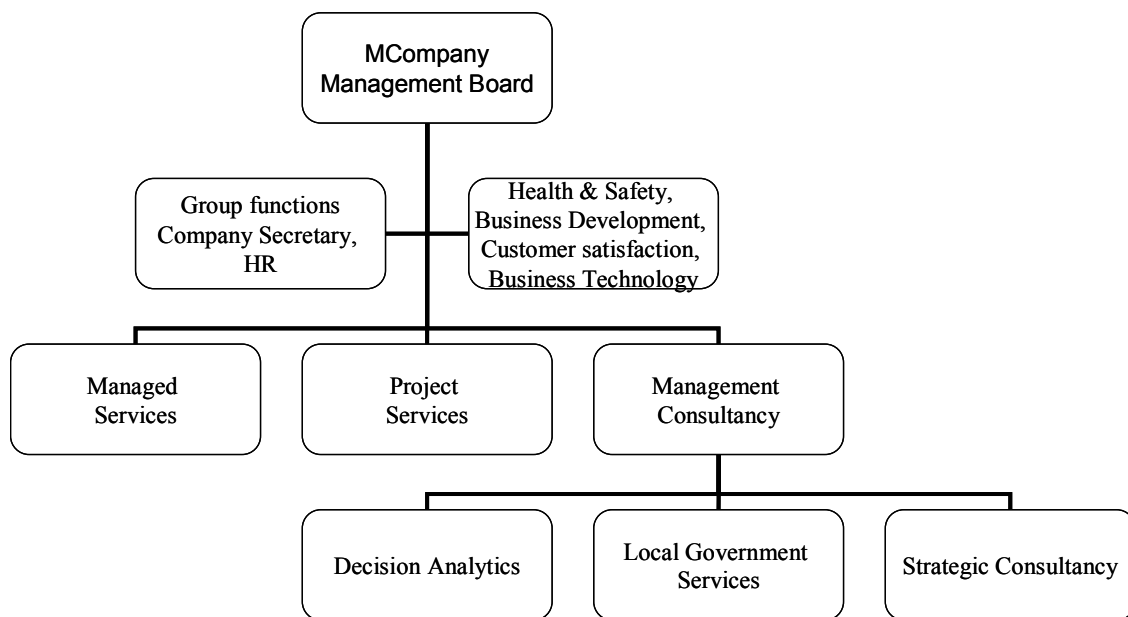
Figure 2.2. MCompany structure. Source: MCompany organisation chart 2003.

2.2.1.2. *Towards the floating on the stock market and the foundation of the MC Centre: 1998-first half of 2003*

The restructuring of MCompany's operations and the refocus on key services to key clients paid off soon after the restructuring. In 1997, MCompany secured its first Managed Services commission which was a five-year contract with HH County Council, for the provision of highways planning, management and professional services, which was seen at that time as a groundbreaking partnership. Figure 2.3 shows how by 1998 MCompany was turning into a profitable fast-growing business (2002 12 31 MCompany Report & Accounts 2002).

In order to explain this new structure and the way the business was configured in a simple way, the CEO liked to use the 'dolphin metaphor', which was explained by a senior consultant as follows:

> "MCompany is the dolphin, it had a head which was the kind of thinking, Management Consultancy, it had a body which was what they call the Project Services, which was the old fashioned engineering side of things and it had a tail which was the Managed Services

which was … the white van business if you like, and that was his model" (AM27 – Senior Consultant, 13 02 2006).
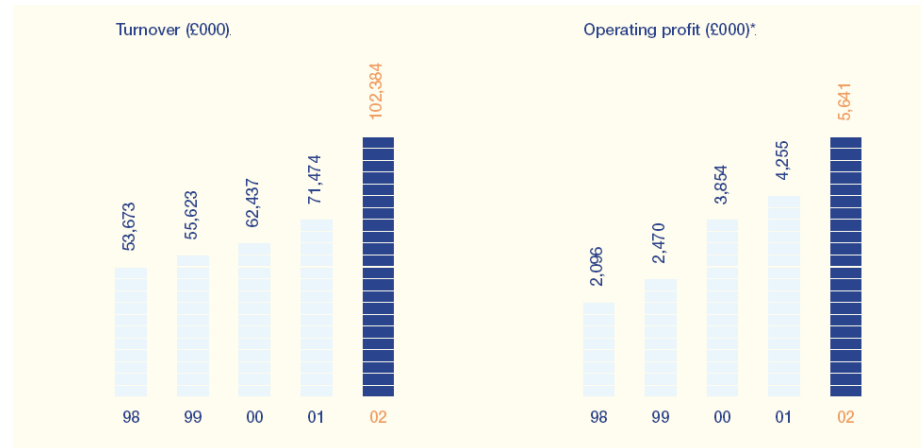
Figure 2.3. Turnover and operating profit 1998-2002. Source: Report & Accounts 2002.

Management Consultancy was then seen as the unit which would contact the top management of prospective clients to provide strategic advice. Where appropriate, if that advice comprised the reconfiguration or development of the client's asset base, MCompany would be prepared to offer design and build 'Project Services'. In the case of large infrastructure assets or complex provisions, the 'Managed Services' unit would cater for the operation and running of the asset or service.

Management Consultancy is an important area in enhancing MCompany's status as a broad-based support services group. Management Consultancy is particularly important for this study since it is the area of MCompany's business with which Cranfield had closer and more regular contact with, and the unit where the MC Centre was hosted. At the forefront of MCompany's business strategy, Management Consultancy is the business unit where 'thought leadership', new knowledge and innovative management ideas are critical. Management Consultancy, according to MCompany's corporate documentation, working closely with clients, offers "applied management consultancy and creates practical solutions that have real and lasting effect on operational performance and service delivery" (Business Consultancy Prospectus 2000). MCompany prides itself on being able to support initiatives which require a wide range of expertise, in-depth knowledge and greater understanding of technical, financial and commercial issues.

In order to further promote 'thought leadership' and to develop Management Consultancy's knowledge base, MCompany aimed to partner with a recognised academic institution. After an initial search for appropriate academic partners, preliminary conversations were held with Cranfield School of Management (A3, Non-Executive Director, 24/01/2006). An agreement with one of the School's centres, the Advanced Management Research Centre (AMRC), was signed in December 1999 (1999 12 02 MCompany agreement- Memo of understanding). Subsequently, the MCompany–Cranfield School of Management relationship developed and the two organisations decided to found a jointly -managed research centre, the MC Centre, in April 2001. The aim of the centre was to bring about new learning and knowledge, fostering

innovative thinking as a mechanism to strengthen Management Consultancy's offerings, thus enabling MCompany to differentiate itself from competitors in the marketplace (2001 01 11 Heads of terms MC Centre). The conception, establishment and development of the MC Centre are further explained in section 2.3: The MC Centre.

In order to fully grasp the context of the case study, it is worth describing MCompany's Management Consultancy business in more detail. Management Consultancy provides, among others, the following key services: strategic consultancy, procurement, asset management, and change management. *Strategic consultancy* offers advice on organisational strategy and design, asset diversification, strategic management, and market and industry trends. The combination of groundbreaking ideas, a pragmatic approach and years of commercial experience enables Strategic Consultancy to develop effective strategies, thus resolving short and long-term business issues, organisational and technical challenges faced by MCompany's clients. *Procurement* is the area where MCompany provides advice on the procurement of contracts, with special expertise on PFI and PPP projects. The *Asset Management* section uses advanced modelling techniques to help clients understand, plan and improve the efficiency of their assets and to outline long-term management options. Finally, *Change management* is offered to public and private organisations to manage their business transformation projects (MCompany website 2006).

At the end of 2002, a set of five research projects was set up, benefiting from funding from an Engineering and Physical Sciences Research Council (EPSRC) grant, where MCompany acted as the main industry collaborator. The criterion for selecting the projects was that their themes fitted MCompany's business objectives, and at the same time were conducted using an evidence-informed approach to management knowledge (EPSRC bid document June 2002). The *first project* on high reliability organisations (HRO) fitted well within the agendas of both the Strategic Consultancy and Cranfield. The *second project* on managing public–private partnerships (PPP) informed Management Consultancy's procurement offerings as well as the operations of Managed Services. *The third project* on Asset Management (AssM) looked at organisational resilience in the context of organisation that own large infrastructure assets. The theme of the *fourth project* was on private finance initiative (PFI) deals which also fell within the procurement unit of Management Consultancy. Lastly, the *fifth project* themed Business Transformation (BussT) nicely linked to MCompany's change management offering. These projects concentrated most of the MC Centre's activity up to 2004 and are described in more detail in section 2.4 and thoroughly analysed in chapters 7 and 8.

Going back to the recent history of MCompany, by 2002 the business had all the signs of progressing in the right direction. For instance, key contracts such as the HH County Council partnership had very good prospects. On 20th May 2002 the company announced that it had been appointed preferred bidder for the renewal of the contract to start in October 2002 for an initial period of three years, extendable by a further seven years. This contract was worth £70 million over ten years (2002 06 25 MCompany prospectus).

As the chairman of the company recognised,

> "These are extraordinary times for MCompany and for our industry as a whole. In the public sector, the government's commitment to deliver better services is creating a wide range of high value opportunities, driven forward by major policy initiatives. In both public and private sectors, an increasing number of organisations are focusing on their core

customer related activities while turning to specialists such as MCompany to develop, manage and optimise their infrastructure" (2002 12 31 MCompany Report & Accounts 2002 p.5).

With promising business ahead, a consolidated structure, and with mechanisms such as the MC Centre in place to project an image of 'thought leader' to its market, MCompany focused its efforts in preparing for its floatation on the London Stock Exchange. On the 28th June 2002, MCompany was admitted into the Stock Exchange listings, becoming MCompany plc (2002 12 31 MCompany Report & Accounts 2002).

2.2.1.3. The new company: second half 2003-2006

The floatation of the company provided additional financial resources to further strengthen its position and to pursue its strategic objectives. Following its commitment to achieve fast growth, MCompany merged with PCompany creating MPCompany[1] in August 2003. The combination of both companies created a group with the critical mass, expertise and experience required to maximise current market opportunities, enabling the new organisation to win and manage larger and longer-term contracts. The new MCompany employed more than 4,000 staff. MCompany paid 1.2305 new MCompany shares for every PCompany share, valuing an MCompany share at 222.7p. Shares in MCompany rose from 27½p to 208½p while PCompany shares rose from 19p to 255p (Lucy Smy, Financial Times, 22 08 2003).

The merger brought about major changes to the business of the newly formed group. MCompany re-focused its operations on managed services and public sector outsourcing. The role of Management Consultancy lost some prominence. A senior consultant recognised that:

> "[Management Consultancy] was nice for the size of MCompany but when MCompany and PCompany merged, this head of the dolphin, we had such a big tail, so many different tails, you couldn't have one head for it, each tail, each business needed it's own head and they needed to be very focused on that business" (AM27, Senior Consultant, 13/02/2006).

Another significant change was the appointment of PCompany's chief executive as the newly formed MCompany's CEO. According to two of MCompany's directors (P19, Managing Director of Government Services, 16/01/2006 and H10, Managing Director Rail, 13/02/2006), the new CEO found it difficult to acknowledge the value of the MCompany–Cranfield collaboration, since he had had no previous involvement in the research and initiatives conducted at the MC Centre. This lack of in-depth understanding of the potential benefits of 'thought leadership' projects, coupled with a demanding agenda to make the merger successful, diminished MC Centre's priority. A few months later, and after long debates within the executive board (A6, Director of AMRC, 14/03/2006), the CEO communicated the decision to close the MC Centre in October 2004. However, the relationship between MCompany and Cranfield did not end. In 2005, senior consultants from Local Government services (a unit within Management Consulting) contacted Cranfield to work on a project aiming to implement high reliability organisation design principles in one of MCompany's key partnerships. The details of this new project-based collaborative arrangement are explained in more detail in section 2.4.2.

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[1] Throughout the thesis the designation 'MCompany' will be used.

In 2004 MCompany produced a corporate plan with its aims for 2007. The aim is to double its turnover to more than £500 million a year, to increase profit margins to 8% and to employ 7,500 staff becoming a FTSE 350 company by the end of 2007. Building on its initial success, MCompany recently produced a new corporate plan that looks into 2012. Recognising the tremendous opportunities that lie ahead, its aims for 2012 are to raise annual turnover to more than £1.25 billion, to increase profit margin to 10% and to employ around 15,000 staff becoming a FTSE 250 company (MCompany corporate plan 2005-2012).

2.2.2. Cranfield University and the School of Management

Cranfield University's origin goes back to 1946. That year, Sir Roy Fedden who at that time worked for the Ministry of Aircraft Production suggested the creation of a centre of excellence to increase the scale of aeronautical education in the United Kingdom. With the support of the Minister, Sir Stafford Cripps, the College of Aeronautics was founded in 1946. The location was the then Royal Air Force Station, Cranfield, situated in Bedfordshire near the village of the same name. Through the 1950s and 1960s, development of the many aspects of aircraft research and design led to considerable growth and diversification into other technologies and into manufacturing and management. In 1969, the College of Aeronautics became The Cranfield Institute of Technology which changed its name to Cranfield University in 1993.

The last thirty years have seen further substantial progress, including the incorporation of the former National College of Agricultural Engineering at Silsoe and an academic partnership with the Royal Military College of Science at Shrivenham. World-renowned for its teaching and research, Cranfield University is now one of Europe's leading institutions. Its postgraduate programmes and professional development courses have a strong focus on real life issues rather than purely on theory. The university's purpose is to facilitate work with industry and commerce, rather than just within the classroom.

The aim of the university is:

> To be a leading national, European and international institution for the generation, dissemination and application of knowledge in selected areas of engineering, applied science, manufacturing, management and medical science, to both the civil and the defence sectors (Cranfield University, 2006).

This aim is fulfilled by Cranfield University's mission:

> To create and transform world class science, technology and management expertise into viable, practical, environmentally desirable solutions that enhance economic development and the quality of life (Cranfield University, 2006).

Cranfield specialises in seven key areas: management, aeronautics, defence, engineering, health, manufacturing and natural resources. Its faculty is nurtured from staff in senior positions in industry, ensuring that the links to the commercial world are maintained, and that students work on real problems, in real time. A total of 2,856 students from 100 different countries attend postgraduate courses on a full- and part-time basis (Cranfield University, 2006).

2.2.2.1. The School of Management

In 1953, the Cranfield Work Study School ran its very first courses. In the early 1960s, management education started to gain acceptance and in 1963 a one-year postgraduate Diploma was created. This was the predecessor of the now renowned MBA. In 1967, the School of Management was created as a separate faculty following the reorganisation of the College. The School of Management rapidly established itself as a top-quality postgraduate and post-experience school (Cranfield School of Management brochure 2003). The last decade has witnessed the creation of a number of specialist masters such as Logistics and Supply Chain, Strategic Marketing, Finance, International Human Resources, Programme and Project Management and recently Performance Management and an MSc by research in Learning and Change.

Tightly aligned with the University's approach to learning, teaching and research, the School of Management puts an emphasis on creating enduring knowledge by working with students and practitioners in the context of application. The Director of the School states in its message on the School's web site,

> Welcome to Cranfield School of Management, one of the world's most prestigious, and
> arguably the world's most *relevant* management school. 'Quality', *'action'*, '*partnership'*
> and 'personal development' provide the essence of the Cranfield approach to learning and
> you will find these themes throughout all of our activities represented on this site.
> (Cranfield School of Management, 2006). Emphasis added.

With the triple global accreditation of the AMBA, EQUIS and AACSB, the School aims to offer 'the Cranfield Experience' by tailoring knowledge to individual needs, and by developing customised programmes for organisations. Overall, its purpose is to provide delegates and graduates with the right mix of business knowledge and management skills. What distinguishes Cranfield School of Management from other institutions is its long history of academic excellence closely in touch with the needs of business and industry. The School has a high calibre of employees and associates who have the ability to provide credible results through research, teaching and consultancy.

In addition to its learning and teaching aims, the School has a research mission which is:

> To further develop a research activity of international quality and standing which delivers
> enduring fundamental, policy and strategic knowledge contributions by working primarily
> 'in the context of application'. Our research effort will inform our teaching, executive
> programmes and staff development as well as being financially sustainable (School of
> Management Research Strategy Statement, January 2004).

This mission statement positions the School to make not only fundamental or 'basic' contributions but also to undertake 'strategic' or 'policy-level' research. The expected contributions of this research strategy are more general than practitioner knowledge, but less aggregated than the scientist's, facilitating its utilisation in policy and practice.

The School went through a major organisational restructuring following the appointment of its new director in 2003. The structure organised the School into four 'communities', the Centre for Customised Executive Development (CCED) and the Cranfield Management Research Institute (CMRI). The four communities are groupings of related disciplines and incorporate research groups and research centres. CCED is the School's centre for designing

and delivering customised executive development, offering relevant new management knowledge combined with world-class development expertise. The CMRI will house the School of Management's research centres plus its doctoral programmes in a brand new facility expected to be inaugurated in 2007.

Figure 2.4 shows the School structure. AMRC and the MC Centre are located within the Innovation and Process Management community.

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│         Cranfield Management Research Institute                   │
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Figure 2.4. Cranfield School of Management Structure. Source: Strategy & Organisation, November 2003

When in 1999 MCompany contacted the School to set up the partnership, initial conversations were held with different senior faculty. After considering the potential collaborative research agenda and MCompany's interests, the AMRC was nominated as the key point of contact and managed the relationship with MCompany. The next subsection describes the aims and research agenda of the AMRC.

2.2.2.2. *The Advanced Management Research Centre (AMRC)*

The AMRC was founded in 1998 with the aim of creating an enduring and dependable knowledge base that provides the platform for performance improvement following collaborative research approach with managers. The AMRC helps to develop the tools, rules, guides and methodologies that create new thinking and approaches to ensure the development of high performing organisations by focusing on three key broad thematic areas. The first is increasing *efficiency*, i.e. searching for new ways to obtain more from less. The second is developing *high reliability* ensuring medium term mission delivery through the development of, as near as possible, 'failure free' products, services and processes. The third is introducing rapid and effective *innovation* by promoting continuous knowledge-based change, reducing change cycle times and creating dynamic organisational environments (AMRC brochure 2003).

The AMRC works with practitioners to co-produce knowledge, conducting research 'in the context of application', to ensure both the relevance and topicality of its work. Increasingly, managers require robust knowledge to provide the foundation for their decision-making and actions. The collaborative approach understands and supports this, helping create new thinking and approaches to managerial problems (AMRC brochure 2003).

As mentioned above, in 2001 AMRC jointly established with MCompany the MC Centre for Infrastructure Management, with the aim of co-producing 'thought leadership' and bringing about organisational learning and knowledge in areas related to Infrastructure Management. This doctoral study focuses on the enablers and barriers to the learning and knowledge processes. The next section presents a detailed description of the MC Centre, its activities and its people.

2.3. The MC Centre

The previous section outlined the organisational context of this study, namely MCompany and Cranfield School of Management's AMRC, and provided a detailed description of MCompany and Cranfield School of Management. This section describes in detail the key activities of the MC Centre, to help understand how it was configured to become a key vehicle for the development of learning and knowledge in MCompany.

In order to present the key events in the history of the centre clearly, a chronological approach is used. The analysis of the data revealed four distinct periods in the lifecycle of the centre: inception, establishment, expansion and decay. *Inception* (1999–2000) was the period in which MCompany decided to establish a relationship with Cranfield for the purpose of conducting applied research and promoting thought leadership. *Establishment* (2001–2002), was the period that led to the formation of the MC Centre. *Expansion* (2003) was the period of increased research activity within the centre, when the five evidence-informed projects were conducted. *Decay* (2004) was the period in which the centre's activities declined, leading to its end.

Figure 2.5 provides a schematic representation of the centre's life cycle which is explained in detail below. Two key dates are highlighted, its formation in April 2001 and its closure in October 2004. In the inception phase, the initiation of the MCompany–Cranfield School of Management relationship in December 1999 is marked. In the establishment period, the definition of a 3-year plan, the incorporation of key people and the initiation of two projects are highlighted as key significant events. During the expansion period, the start of the grant and the evidence-informed projects together with the merger are the key episodes. Lastly, the decay is characterised by the departure of key people within the centre and its closure.
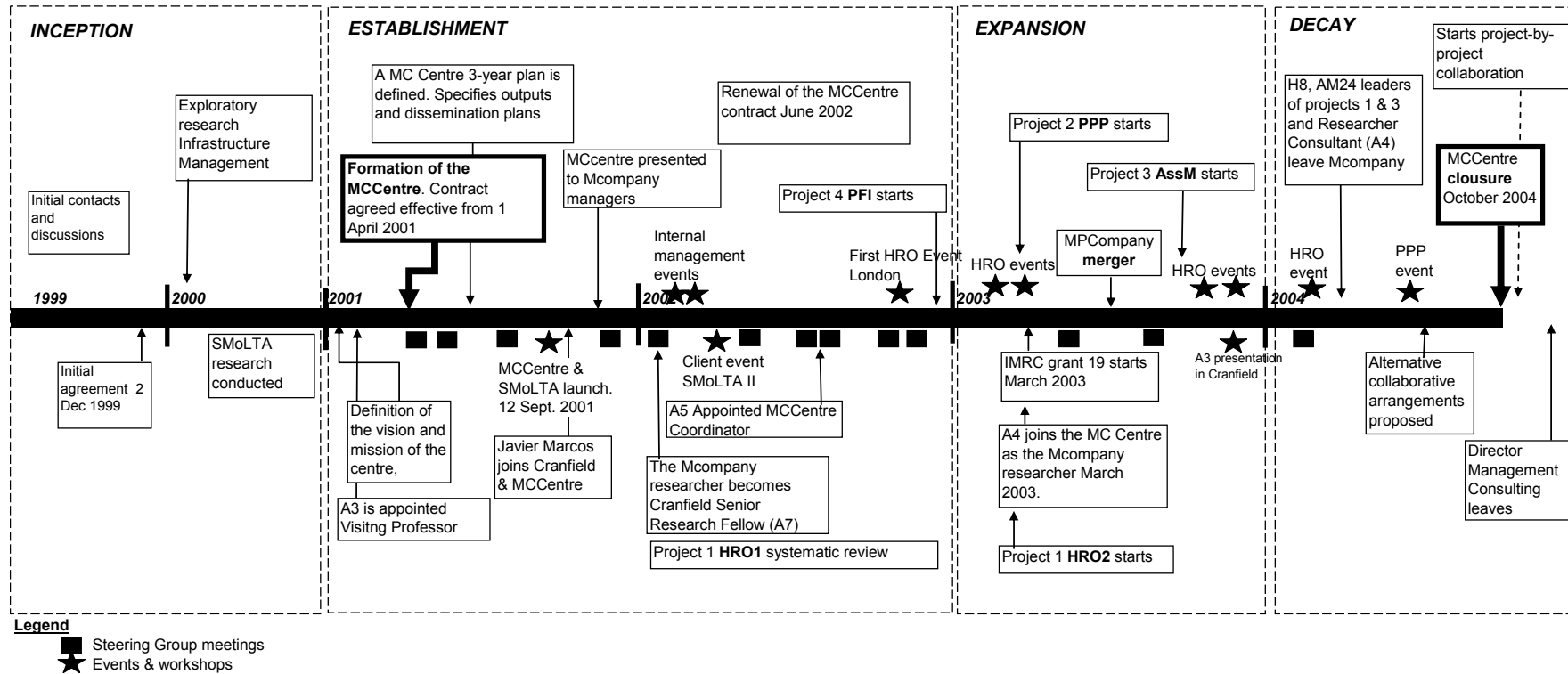
Figure 2.5. Chronological overview of the MC Centre. Source: compiled by author.

2.3.1. The MC Centre: chronological development

2.3.1.1. Inception: initial contacts and applied research projects: 1999-2000

At the beginning of 1999, MCompany was determined to promote "thought leadership", "innovative ideas" and to foster "learning and knowledge processes" as a mechanism to differentiate itself in the marketplace (A1, CEO MCompany, 20/08/2003). At that time, the Non-Executive Director (A3) who was closely involved in MCompany's board's decisions, was asked to develop these concepts. In so doing, this director sought to establish a link to a university management school. The Non-Executive Director considered all the institutions in the UK, and based on the schools' prospectuses and RAE rankings short-listed those he believed MCompany could form a synergistic relationship with. The University of Surrey, the University of Reading and Cranfield University were chosen. As he described,

> "I didn't specifically want a school that had strong links with civil engineering because MCompany was strong at that and I wanted a school that had much more of a management ethos, a business ethos if you see what I mean, a lot of these schools had their own areas, business processes, hard financial management, financial markets, whereas Cranfield is a management school about management processes, which was what we were very much into at MCompany" (A3, Non-Executive Director, 24 01 2006).

The physical distance between MCompany and Cranfield University's premises was not an impediment to establishing the relationship, and Cranfield School of Management was chosen as the preferred partner. According to the Non-Executive Director (A3), the School's areas of expertise, its organisation, and particularly the themes that ran across different research centres, such as change management, matched MCompany's preliminary expectations and interests.

Initially, conversations were held with different senior faculty at Cranfield who were keen to establish a close relationship with MCompany. The AMRC and its director (A6) were perceived by MCompany's executives to connect well with their purpose.

> "As it happened the Director of AMRC understood a lot about what we were doing because he came out of an engineering, management consulting background and understood quite quickly what we wanted" (A3, Non-Executive Director, 24/01/2006).

In December 1999, the Director of the School of Management appreciated MCompany's aspirations to become a thought leader in the area of infrastructure management, and its aim to promote new learning and knowledge within the company (1999 12 02 MCompany agreement – Memo of understanding). As a result, MCompany and Cranfield signed an initial agreement to work toward the establishment of a jointly-managed research centre to carry out research in areas relevant to the company. This initial agreement contained details of an preliminary commissioned research project called the Strategic Management of Long-Term Assets (SMoLTA). This agreement set out that, after SMoLTA was completed, MCompany and Cranfield would agree if the proposed research Centre was viable, and if so, make the necessary arrangements.

The SMoLTA research

Initial exploratory work was conducted in 2000 to scope and dimensionalise the broad domain of infrastructure management. From this early work, it was concluded that private companies and public bodies were taking a more strategic view of their assets. It was also noted that relationships, partnerships and the means of managing the assets were changing significantly. The exploratory work pointed to the fact that civil engineering and construction groups have refocused their businesses on providing complete infrastructure solutions. The report concluded that few of the organisations in the field supplied a complete range of services, which clients were increasingly demanding (2000 02 28 Findings exploratory Infr. Mngmt).

After the exploratory phase, a research team involving staff from both MCompany and Cranfield School of Management was formed to carry out the SMoLTA project. The research was conducted by means of a survey (administered to 24 selected organisations of varying sizes from the public and private sectors) and four case studies of organisations that have an excellent reputation in the field. Research findings highlighted the increasing importance of managing assets, both as a widespread organisational need, and as a national priority. The report identified Public–Private Partnership (PPP) and Private Finance Initiative (PFI) as styles of contracting and working that were fundamentally changing the traditional provider–client relationships. The research also revealed "the need for the creation of 'failure free' performance", and to achieve this, suggested the adoption of "high reliability organisation design principles" (The MCompany-Cranfield Centre, 2001 p.6). Lastly, the findings suggest that managing change effectively and the right organisational culture were critical determinants of successful asset management approaches.

The SMoLTA research was finalised by the end of 2000, and the report finished by June 2001. According to the initial plan, a workshop was scheduled to disseminate the results of the research and to engage in 'thought leadership' with senior managers (MCompany-Cranfield Launch Dinner Programme 06 09 2001). The report was officially released on the 12th September 2001 in London. According to the people involved in this project (P19, Managing Director Government Services, 16/01/2006), the SMoLTA report identified promising areas for further research. These key areas for future research such as 'high reliability', PPP, PFI, change management and asset management, became a project in their own right a year later, and are described in detail in the next section.

The SMoLTA research project proved that the relationship between MCompany and Cranfield School of Management was viable (A3, Non-Executive Director, 24/01/2006). In April 2001 the MCompany–Cranfield Research Centre, (hereafter the MC Centre) was founded (MCompany-Cranfield agreement 01 04 2001). Coinciding with the release of the SMoLTA report, on the 12th September 2001 the establishment of the MC Centre was made public to MCompany staff, to MCompany's key clients and the media (MCompany Cranfield launch release v4. doc). This marked a new era for the MCompany–Cranfield relationship which is the focus of the next subsection.

2.3.1.2. Establishment: 2001-2002

As noted above, the perceived success of the SMoLTA research, led to the decision to establish a joint Research Centre with effect from 1st April 2001. The aim of the Centre was to carry out and disseminate research in managerial and organisational aspects related to

infrastructure management, and the mission of the centre was to become *"the foremost international centre for applied knowledge in infrastructure management"* (2001 04 01 MCompany-Cranfield agreement).

The initial agreement stated that over a period of time the MC Centre would develop a range of initiatives (2001 01 11 Heads of terms MC Centre). For example, it would:

- promote the concept and practice of infrastructure management,

- develop academic and practitioner links nationally and internationally,

- publish in academic and practitioner journals,

- conduct conferences, short courses and workshops,

- attract research funding from a range of sources,

- contribute to MBA programmes,

- manage PhD Students, and

- carry out selected consultancy studies in the management of infrastructure.

A Steering Group for the Centre was appointed, to set the overall direction of the MC Centre, to specify a research agenda and to provide guidance and support on key issues (2001 03 19 Actions MCC Steering group meeting). The following table summarises the positions and roles of the people involved in the establishment and early running of the MC Centre, detailing their positions in their respective organisations.

Designation	Position in the organisation	Role in the MC Centre
A1	Chief Executive Officer MCompany.	Chairman of the MC Centre. Co-founder MC Centre.
A2	Managing Director of Management Consultancy.	Co-Director of the MC Centre (MCompany).
A3	Non-Executive Director MCompany.	Visiting Professor of Infrastructure Management. Co-founder MC Centre.
A4	Consultant in Strategic Consultancy.	MC Centre Research Consultant (MCompany) during 2003-2004.
A5	Marketing & Project Manager.	Coordinator of the MC Centre (MCompany) during 2002.
A6	Director of the Advanced Management Research Centre (AMRC).	Co-Director of the MC Centre (Cranfield).
A7	Researcher MCompany (period 2001-2002). Senior Research Fellow Cranfield School of Management 2002 onwards.	Researcher MCompany (period 2001-2002). MC Centre Project Manager (Cranfield).
A8	Director of Cranfield School of Management (1987-2003).	Co-founder of the MC Centre.
A9	Senior Research Fellow. Cranfield School of Management.	Contributor and participant.
A10	Personal Assistant to the Managing Director of Management Consultancy.	Administrative support.
A11	Director of Business Development (up to 2003).	Contributor and organisational support.
Javier Marcos	Doctoral student (2001-2003 and 2005-2006). Research Officer for the Grant (2003-2005).	MC Centre Researcher (Cranfield).

Table 2.1. Position and roles of the people involved in the establishment of the MC Centre. Source: Actions MCC Steering Group meeting 19/03/2001.

The MC Centre Steering Group meeting on 19th March 2001 suggested that a 3-year plan was developed. This plan outlined the desired outputs for the centre (MCC 3 year plan & dissemination strategy 13 05 2001), including:

- Publicity / recognition in the press and by agencies.
- Demonstrating thought leadership and development of intellectual capital.
- Staff / management development.
- Gaining a greater understanding of clients needs.
- Access to practitioner knowledge.
- Access to policy discussion in the area.
- Attracting external resources: management time, funding etc.
- Developing new ways of disseminating knowledge.

In order to achieve these outcomes, the plan identified several dissemination channels, such as events with clients, a website and intranet, workshops, MCompany 'away days', academic publications, trade publications, and conferences.
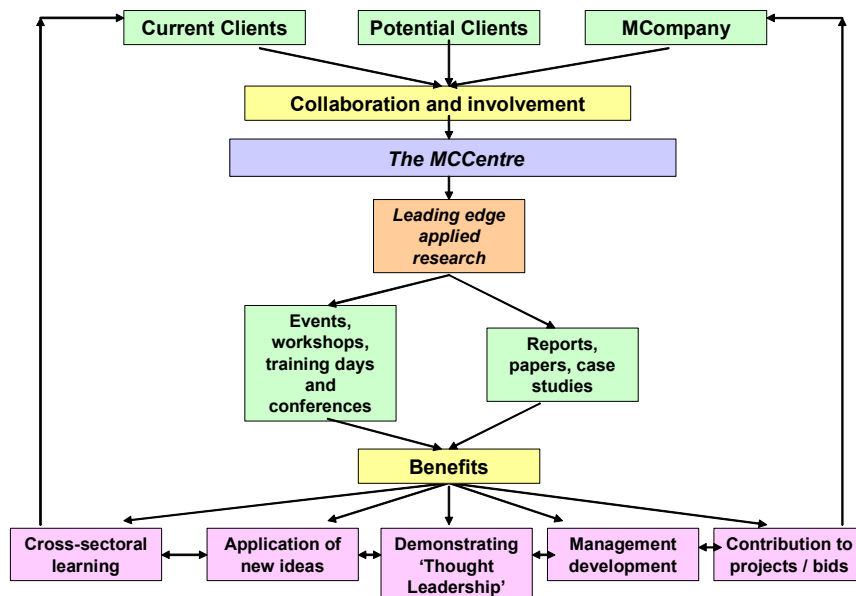
Figure 2.6. An illustration of the MC Centre work process. Source: MCompany Away Day 5&6 December 2001

The initial stage of the MC Centre's efforts was marked by an emphasis on aspects such as visibility, client relationships, and dissemination of outputs (Actions Steering Group meetings held on 17/05/2001, 31/07/2001, and 02/10/2001). The MC Centre researcher (A7) devoted time and effort to identifying the appropriate mechanisms to make these aspects work (Thought leadership activities diagram 25/09/2001. MCompany-Cranfield media list 2 05/10/2001). Importance was given to communicating internally within MCompany what the MC Centre was about, particularly how it aimed to bring together clients and MCompany staff into the research and thought leadership initiatives (Research Plan Q4 2001 15/11/2001).

During 2002, various workshops and events were organised. In January and February, two large management development workshops were attended at Cranfield by MCompany's top and second-layer managers. At the workshops, the themes of 'infrastructure planning' and 'high reliability organisation design for failure-free service operations' were presented and discussed (Programme Managers Workshop 22/01/02; Managers Event Programme - CMDC 25&26/02/2002). In March, a selected group of clients was invited to an event to discuss strategic questions that emerged after the SMoLTA research (Programme Client event 20/03/2002). In November, the director of Strategic Consultancy presented the MC Centre's latest research on high reliability organisations in a selected clients' event (2002 11 20 High Reliability at What Cost). All these initiatives were highly commended within MCompany. The workshops and events were seen as the key mechanisms for delivering the MC Centre mission, and a key metric in assessing the Centre's activity (A2, Managing Director of Strategic Consultancy, 02/02/2006).

In July 2002, consistent with the original aim of the MC Centre to attract research funding from a range of sources, a research proposal for obtaining public funding was presented to one of the Research Councils. The overall aim of the research was to develop a field-tested and grounded prototype methodology for generating and utilising research evidence in the management field. The proposal was successful and research started in March 2003. It provided funding in excess of £112,000 for the employment of a Research Assistant (the author of this thesis), other staff costs and general expenditures. MCompany agreed to be a principal collaborator in the grant, contributing 'in kind' (staff time) to a budgeted sum of £338,000 (EPSRC bid document June 2002).

With research funding secured, and informed by the SMoLTA research and MCompany's interests, five research projects were agreed (Steering Group Meeting 25/07/2002) as follows:

- Project 1. High reliability organisations (HRO).
- Project 2. Public private partnerships (PPP).
- Project 3. Asset management (AssM).
- Project 4. Private finance initiative (PFI).
- Project 5. Business Transformation (BussT).

These projects marked a substantial increase in the research activity of the centre as well as events with industry leaders, a period to which we now turn.

2.3.1.3. *Expansion: the evidence-informed management knowledge projects 2003*

After defining the projects, five different teams were formed by researchers from Cranfield and consultants from MCompany to carry out the research projects. The Cranfield researchers (The Director of AMRC – A6, the Senior Research Fellow – A7, and the Researcher and author of this thesis) were part of all project teams. MCompany staff were assigned to each project according to their area of business, though Management Consultancy provided the leaders and the team members for all the projects except for Project 2 (PPP). The details of each project and the events associated with them are presented in detail in section 2.4 (MCC proposal research teams for projects 28/10/2002).

In 2002, the MC Centre Researcher (A7) joined Cranfield as a Senior Research Fellow, becoming a School of Management employee. The contract between MCompany and Cranfield School of Management specified that the MC Centre would be staffed with at least two researchers, one from each organisation (Heads of terms MC Centre 11/01/2001). MCompany's Marketing Manager (A5) temporarily assumed a co-ordination role. Given the scale of the new research agenda for the Centre, filling the MCompany Researcher role became critical. A consultant from the Strategic Consultancy department (A4) was appointed in March 2003 becoming the MCompany 'Research Consultant'. Soon after that, the Marketing manager (A5) returned to his business duties, adding the co-ordination functions to the Research Consultant's research duties (MCC Structure for the EBP period, 10/03/2003).

In this doctoral study, the role of the Research Consultant is very important, and his contribution and performance a key factor in the development of the MC Centre and the projects as we will see in chapters 6 and 7. A job description was produced specifying that the Research Consultant was expected to contribute to the defined research programme and (Job Description MCC Researcher, 20/03/2003):

- To conduct short research projects involving the collection of primary data through surveys, interviews with senior managers and the production of case studies.

- To provide research support to research projects conducted by MCompany employees.

- To provide research support to the work of the IMRC 19 grant.

- To produce relevant outputs in the form of presentation materials, practitioner-oriented papers and academic papers.

- To disseminate the research findings internally (within MCompany) through management development events, presentations, workshops, intranet and the website.

- To organise and run thought leadership events, which will be attended by industry leaders and key MCompany's clients.

- To help develop and manage a budget for the centre.

The evidence-informed management knowledge projects progressed as planned over the first semester of 2003 (Actions Steering Group 24/07/2003). In August 2003, when two systematic reviews had been finalised and the two projects were well under way (HRO and PPP) and another review was half completed (a follow up of HRO), MCompany announced its merger to PCompany to form MPCompany (Financial Times, 22/08/2003). Initially, the merger was seen as a good opportunity for the Centre to access more resources and to involve more participants from the newly merged company, potentially expanding the centre's stakeholder base. However, the merger drew significant time and energy of key people from the projects, having an overall detrimental effect to the MC Centre's research programme (P19, Managing Director Government Services, 19/01/2006).

For the few months that followed the merger, the MC Centre had some difficult times. MCompany's expectations of deliverables were not fully met (Agenda Steering group 14/10/2003), and there was a perceived lack of 'tangible outputs' from the research activity (A2, Managing Director of Management Consultancy, 4/08/2003). The director of the

AMRC recognised in the interview that what MCompany was expecting apart from organising events were 'knowledge products' to be included in its portfolio of consulting services but that it was not making the necessary investments in terms of time and staff (A6, Director of Research 16/03/2006). The Cranfield team reviewed the approach and procedures of the work conducted at the centre in an attempt to identify why MCompany's expectations were not being met, and proposed a potential process model to move towards the 'knowledge products' expected by MCompany (MCC process flow 14/10/2003).

This process model showed (see figure 2.7) that the systematic review of existing evidence was only the first of at least three phases: dimensionalising, modelling and product development. To achieve MCompany's expected 'tangible products' more time an effort was needed to model research evidence and to prototype the end product. In the post-merger environment this time investments were not readily available. This situation worsened during 2004, leading to the decay of the Centre.
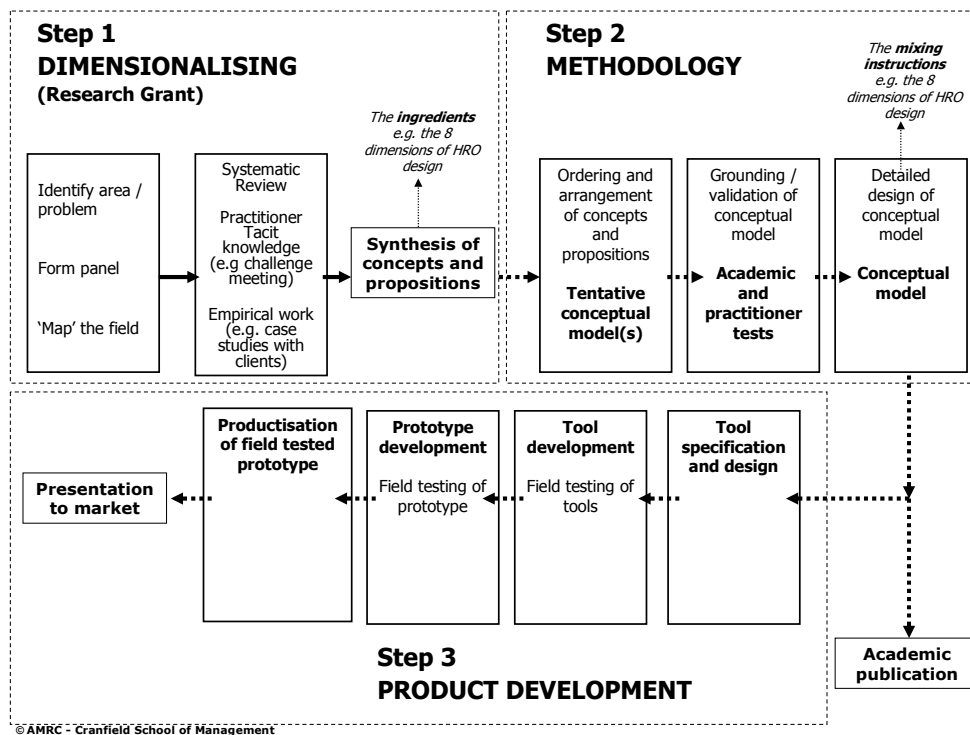
Figure 2.7. MC Centre process flow. Source: MCC process flow 14/10/2003.

2.3.1.4. *The decay of the MC Centre: 2004*

Year 2003 was intense in terms of research activity, meetings, internal workshops and external events with clients, particularly up to the merger in August 2003. During the months that followed the merger, the centre witnessed a decrease in its activity. The emphasis of the first quarter of 2004 was to revitalise the research agenda and to regain people's involvement (Field notes Steering group-reduced- meeting 27/01/2004; Key Lessons Learnt 01/03/2004). In particular, once the merger was settled, it was important to communicate to key former

PCompany executives what the Centre was about and what it did (MC Centre Vision 18/05/2004).

Year 2004 was marked by the departure of key people in the Centre. The former MCompany CEO (A1) who became the Chairman of the MC Centre after the merger, disengaged from the Centre's activities for personal reasons. The visiting professor and MCompany Non-Executive Director (A3) also stepped down soon afterwards. The Director of the Decision Analytics department and leader of the Asset Management project (AM24) left in January 2004 and the Research Consultant (A4) resigned in April 2004. Two months later, the director of Strategic Consultancy (H8), a key individual in the development of the MC Centre and leader of the HRO project, left MCompany. Finally, the Managing Director of Management Consultancy (A2) and co-director of the MC Centre took early retirement in December 2004.

In August 2004, facing a drop in the MC Centre's productivity and recognising a deterioration of the MCompany–Cranfield relationship, the Cranfield co-director of the MC Centre had a meeting with MCompany's new CEO to assess the situation and to explore potential ways forward. In that meeting it was confirmed that there was a real interest and willingness within MCompany to engage with Cranfield School of Management in a research-based endeavour. It was recognised that engaging in research offered MCompany the opportunity for thought leadership on a systematic basis, building research-based expertise within the company and avoiding the risks of being perceived as merely a traditional engineering services organisation in the marketplace. The MC Centre had achieved much already, but a revised functioning model was required to meet the operational challenges already encountered (Letter to MP CEO - Alternative model 24/08/2004).

The collaborative model so far rested heavily on the Research Council's grant whereby Cranfield researchers conducted and delivered academic research and MCompany staff conducted applied research and organised events to engage clients. This approach was seen as difficult and demanding, and as only capable of producing results in the medium term. In August 2004, an alternative collaborative strategy was proposed consisting on a project-by-project approach, which provided more flexibility, shorter timeframes, and closer to market deliverables. The Director of the AMRC suggested that given the nature of the conversations and the current situation, a project-by-project approach might better achieve MCompany's objectives and the expectations of the senior management team about the MC Centre (Letter to MP CEO - Alternative model 24/08/2004). Two months later, on the 18th October 2004, the MCompany's CEO communicated the decision not to continue with the present arrangements between the company and Cranfield, resulting in the closure of the MC Centre (2004 10 27 Letter to CEO re close of MC Centre). However, the relationship between MCompany and Cranfield did not end. The HRO project was taken further and the findings from research were used in a change programme in one of MCompany's key clients. The details of this implementation are described in detail in section 2.4.2.

In March 2005, the Research Council grant ended, and the Cranfield team took stock of the deliverables produced so far. Over the last 3 years, the work carried out in the MC Centre had directly or indirectly resulted in the following outputs: 8 academic papers published, 4 papers in review or preparation, 4 articles online, 6 published reports, 3 articles in the professional press, 14 conference papers, 5 seminars, 5 invited lectures, 5 courses and workshops and 8

management development events (Outputs list as at June 2005 01/06/2005). It is expected that this thesis, which explores the case of the MC Centre, will become a PhD award.

These deliverables were very valuable for both MCompany and Cranfield School of Management. Some of the outputs achieved were substantial, contributing significantly to the respective aims of each organisation. However, it is believed that some of the difficulties experienced, particularly during the decay period of the MC Centre, limited the achievement of further outcomes, hindering the full realisation of learning and knowledge.

The MC Centre and the research projects that comprised its research agenda are different levels of analysis, thus different entities. However, the extent to which the MC Centre accomplished its mission was heavily dependent on the results of the individual research projects. In the introduction it was advanced that these research projects achieved very disparate results. HRO was perceived as a very successful project, PPP was recognised as partially successful, AssM largely unsuccessful, PFI was abandoned and BussT failed to initiate.

In order to understand the specific events and circumstances that surrounded the projects, as well as their content, the rest of the chapter is devoted to providing a detailed description of the research projects. In so doing, the descriptive approach used so far in the chapter is maintained, focusing on objective facts of 'what happened'. However, the description of the success of each project, involves subjective evaluation. In this case, statements from the actors involved will be used to present the outcomes of each project, to minimise potential bias.

2.4. The research projects

The previous sections have described MCompany, Cranfield School of Management and the MC Centre. This has provided a detailed characterisation of the organisational context of the case study. The aim of this section is to offer a thorough description of the embedded units of analysis of the case study. First, a brief description of how the projects were conducted is presented. Then, the chapter describes in turn each of the five research projects: high reliability organisation design (HRO), public private partnerships (PPP), Asset Management (AssM), Private Finance Initiative (PFI) and Business Transformation (BussT). In so doing, the thematic content of the projects, the people involved and key events are presented covering the period from 2002 to 2006. Subsequent chapters of the thesis will present an analytical account of the projects (chapter 7) and a cross-project analysis (chapter 8) of the key enablers and barriers to learning processes.

2.4.1. Overall approach to conducting the research projects

In April 2003, the MC Centre benefited from funding awarded to the AMRC by the EPSRC to conduct research on the methodology for evidence-informed management knowledge using systematic review. The purpose of the research programme was to develop a field-tested and grounded prototype methodology for generating and utilising research evidence in the management field. Specifically, the project aimed to develop and detail a conceptual model for using systematic review in the business and management disciplines. MCompany agreed to act as the prime industry collaborator (EPSRC bid document June 01/06/2002).

The award of the research grant meant a significant change to the way research was conducted at the MC Centre. An evidence-informed approach to management knowledge was adopted (Tranfield, Denyer et al., 2003). This approach involved the integration of the most reliable and relevant research evidence available, with knowledge and expertise from within the company. The evidence-informed approach places an emphasis on the *co-production of management knowledge* (Tranfield, Denyer et al., 2004b) as opposed to the model where academics conduct the research and the practitioners use it (Approach conduct Forums and SRs 27/08/2002). MCompany recognised the value of this approach arguing that the integration of research findings and consultants' expertise was a winning formula and a valuable method to create new knowledge to inform quality consulting services (A3, Non-Executive Director, 24/01/2006).

The evidence-informed approach to management knowledge using systematic review can be summarised in four key stages (Tranfield, Denyer et al., 2003). In the *planning* stage, the research team is formed and the aim of the research specified. *Conducting the review* seeks to find the best available evidence to inform the research. *Reporting* synthesises the methods employed and the findings derived from the systematic review. The *Dissemination / utilisation* stage is focused on integrating practitioner expertise with published evidence and on fostering the use of insights (Approach conduct Forums and SRs 27/08/2002). The whole process is succinctly described in the Table 2.2.

Stage	Description	Tasks
Planning		
1	Formation of the project team	The project team normally comprises: (1) A 'project sponsor' who is a member of MCompany's management board. (2) A 'project leader' in charge of the liaison with Cranfield and steering the project. (3) At least two additional people from MCompany. (4) One or two representatives from client organisations. (5) A Cranfield researcher (desk research). (6) A Cranfield researcher (project manager), and, where possible (7) a Cranfield academic (content advisor).
2	Research domain	The research domain or area of interest is identified. This is done collaboratively by the research team, trying to specify a topic that is of interest to MCompany and falls within the AMRC's broad research agenda.
3	Scoping study	Initial exploratory work is done to determine the amount of evidence available about an area and to map the key sub-areas and/or debates within the area of interest.
4	Research question	The team identifies a management question on a topic where it is felt that evidence-informed knowledge would be particularly helpful.
Conducting the Review		
5	Systematic review	
5.1	Systematic searches	Cranfield AMRC conducts systematic searches of citation databases (primarily academic) to identify the research evidence that exists. The project team is asked to contribute to the process by identifying and collecting information from sources such as conference papers, company reports and information from the internet.
5.2	Selection of studies	The project team evaluates the relevance of the evidence gathered.
5.3	Study quality assessment	Cranfield researchers assess the quality of academic studies.
5.4	Data extraction and descriptive analysis	Data is extracted from each study included in the review. A tabulated summary is produced listing the types of studies, their contexts/circumstances, the key findings/outcomes and other details.
5.5	Data synthesis: thematic report	A conceptual synthesis of all the studies is produced to tease out the key mechanisms underpinning the issue being researched.
Reporting		
5.6	The report and recommendations	A summary report is written summarising all the aspects described above. Afterwards a workshop is run to help with the interpretation of the findings. People from both MCompany and clients are encouraged to attend.
Dissemination / Utilisation		
5.7	Getting evidence into practice	The research team attempts to consolidate the research-based evidence, the knowledge gained from practitioner's experiences and MCompany's current practices into a transferable model in the form of 'what works, for whom, in which circumstances'. A meeting is called to discuss options for dissemination (e.g. publishing in practitioner journals, practitioner conferences) and different mechanisms and processes for utilising research findings (e.g. training and development courses, use in bids/reports, intranet site). A workshop can be run to further disseminate findings and to discuss and develop a strategy for the implementation of the model/research findings.

Table 2.2. Process to conduct the evidence-informed projects using systematic review.

This sequence of stages with their respective meetings and workshop forms a collaborative approach to research characterised by extensive exchange of ideas, 'negotiations' of meanings and significance, mutual questioning, understanding, refinement of concepts, and contextualisation of findings. Overall, the co-production approach to management knowledge aims to facilitate the use of research to inform practice.

The following figure provides an overview of all the projects. Significant events are signalled, differentiating between project meetings, workshops and events with clients and outputs. The projects experienced periods of low involvement of people from MCompany and lack of activity. These periods are shaded in grey as opposed to black. In chapter 7 we will see the significance of these 'grey' periods.
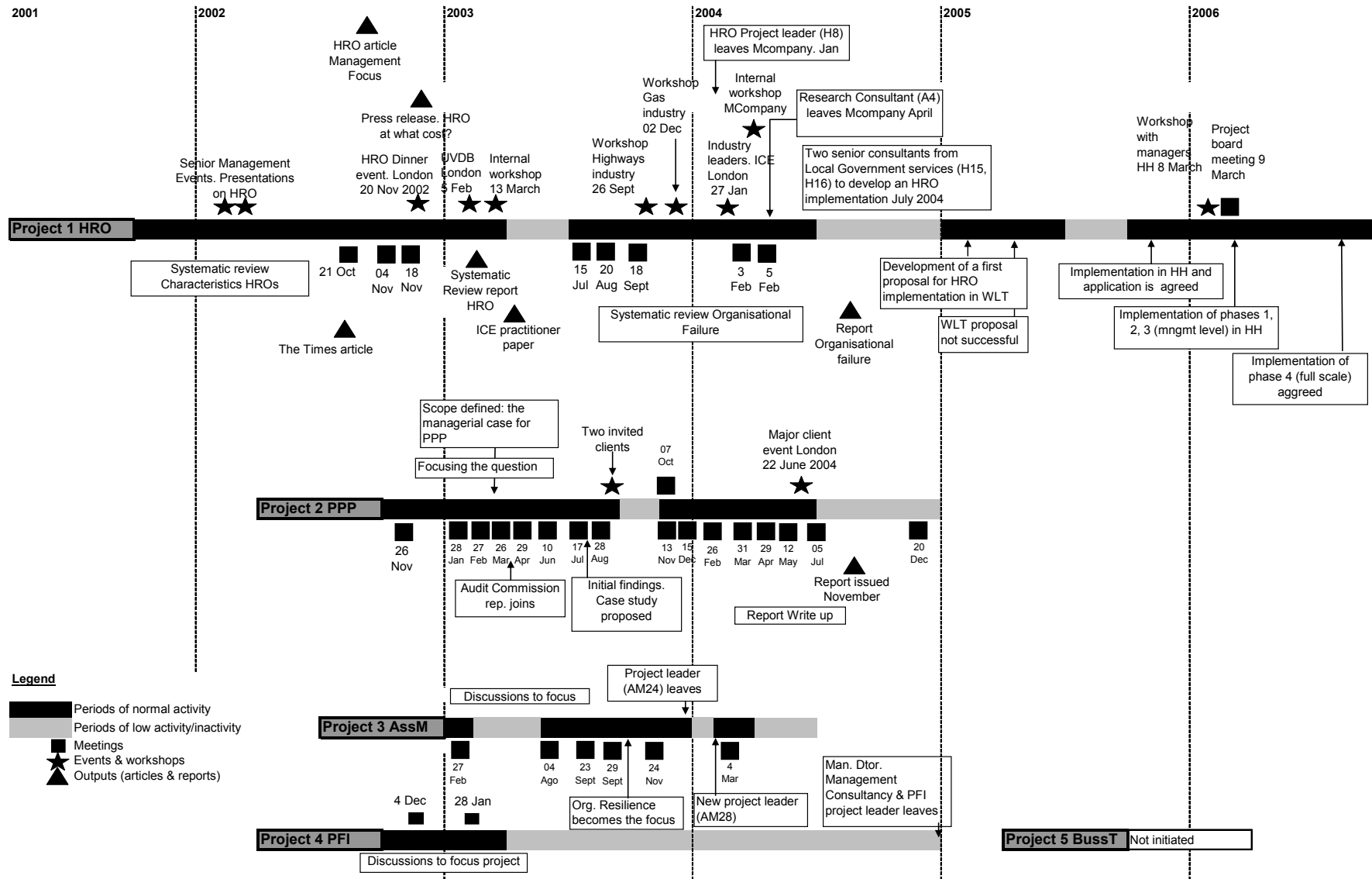
Figure 2.8. Brief chronology of the research projects. Source: compiled by author

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2.4.2. Project 1. High Reliability Organisation design

2.4.2.1. *Scope and focus of the high reliability project*

The need for 'failure free' infrastructure management emerged as a key finding from the SMoLTA report (The MCompany-Cranfield Centre, 2001) and provided the scope for the project. In order to address the creation of 'failure free' organisations, initial exploratory work was conducted to gain a better understanding of how high reliability organisations (HRO) work (Appendix. HRO Scoping Study v1.0 12/03/2003). HRO are those that, whilst operating in high-hazard environments, achieve nearly 'failure free' operational performance. Exemplars of HRO can be found in nuclear power plants, air traffic control, aircraft carriers, emergency response teams, etc.

In 2002 a systematic review of the characteristics of high reliability organisations was conducted. The focus of the project was initially dictated by the aim of the review which was to '*understand the characteristics of high reliability organisations, that enable them to trap, avoid and mitigate against failure'*. The review comprised the assessment of 16 business and management citation databases among which six were selected for systematic searching. Searches covered more than 4,000 management journals. Over 250 potentially relevant studies were located. Twenty-three studies were both relevant and of sufficient quality to be included in the review. A process of inductive synthesis provided 1,280 emergent themes, concepts and organising principles, which were grouped into 67 higher-order categories and further into eight general dimensions. The eight dimensions represent the key 'ingredients' or mechanisms that explain organisational high reliability. A report was issued in November 2002 and a parcel with various binders containing all the studies, tables, reports, and additional materials was produced and sent to MCompany in March 2003.

Briefly explained, the systematic review revealed that high reliability organisations achieve nearly 'failure free' performance through a unique blend of practices and configuration mechanisms such as allocating systems and people redundancy, delivering intensive and extensive training and encouraging specific patterns of communication. HRO are characterised by a strong organisational culture of safety and reliability and ensure that people management practices support reliability in all operations. The decision-making dynamics adapt to specific circumstances such as emergencies, supported by flexible organisational structures that empower people to act regardless of rank or position. The research revealed that HRO implement technology that is understandable and controllable by operators (Marcos, Denyer et al., 2003a).

Initial discussions on the topic of high reliability organisations triggered much interest within MCompany. High reliability thinking had promising propositions to offer in creating 'failure free' infrastructure (H8, Director of Management Consultancy, 27/08/2003 and 13/04/2006). Coincidentally, by the time the high reliability research was being conducted, some fatal accidents occurred in the UK that made this research very topical (A1, CEO, 20/08/2003). In particular, the rail sector experienced accidents like *Potters Bar* (May 10 2002. 7 deaths, 15 critical injuries), *Hatfield* (October 17, 2000. 4 deaths and 87 injuries), and *Ladbroke Grove* (October 5, 1999. 31 people

killed). MCompany's stake in the rail industry helped the project to be perceived as both valuable and very relevant.

Once the systematic review on HRO was finished, the Director of Strategic Consultancy (H8) became involved in the research. He decided to present some of the research findings in a client event on the 20th November 2002 in London, as he recognised, encouraged by his personal interest on the topic, and the perceived potential of the HRO ideas (H8, Director of Management Consultancy, 27/08/2003). Initially, a small research team was formed, comprising the Director of the AMRC (A6), the Cranfield Senior Research Fellow (A7), Javier Marcos, and an MCompany consultant (A4). They worked intensively together to synthesise the key findings of the research and to adapt them to fit the format of a presentation. After several meetings (21/10/2002, 04/11/2002 and 18/11/2002), a coherent and thought-provoking storyline on high reliability organisations was crafted. The presentation was delivered to senior MCompany staff and industry leaders as planned (Dinner event w clients 20/11/2992). The event was well received by the attendees, and the topic triggered insightful discussions amongst key senior managers and MCompany's consultants (Managing Director of Management Consultancy 04/08/2003).

Following the HRO event, a press release (High Reliability at What Cost 20/11/2002) was produced. The HRO research also provided the basis for publications such as a practitioner article (Tranfield, Denyer et al., 2002), conference papers (Marcos, Tranfield et al., 2002; Marcos, 2002), articles in online professional magazines (Marcos, 2004a; Marcos, Denyer et al., 2004c) and other outputs (Outputs list June 2005 31/09/2005).

Two additional major client events with senior executives from both public and private organisations were planned (London 05/02/2003 and 27/01/2004). In addition, an internal presentation (West Byfleet 13/03/2003) and two seminars with sector-specific clients – highways (Cranfield 28/09/2003) and gas (Cranfield 02/1/2003) – were run. As reported by many interviewees, all these initiatives were highly commended within MCompany, as they were mechanisms to realise 'thought leadership' and to provide opportunities to engage with clients in high level positions to discuss strategic issues.

The initial HRO research on the characteristics of high reliability organisations was followed by a further systematic review on organisational failure (Exploring Organisational Failure 2004). The aim of this further review was to gain a deeper understanding of the underpinning mechanisms that led to organisational failures. This review sought to complement prior findings on high reliability organisational design. Specifically the objectives of the review were to address: (1) typologies of failure, (2) patterns of the occurrence failure and (3) factors contributing to system and organisational failure (MP HRO II protocol 03/02/2004).

2.4.2.2. The High Reliability Organisation design project team

The HRO project team started initially as a small research team that grew progressively as more MCompany staff became involved in the HRO initiatives. The people involved

are described in the following table, specifying first their position within their respective organisation and then their role in the project:

Designation	Position in the organisation	Role in project 1 HRO
H10	Managing Director (Rail) and member of MCompany board.	Project sponsor.
H8	Director of Strategic Consultancy.	Project leader.
A1	Chief Executive Officer MCompany.	Chairman of the MC Centre. Contributor.
A3	Non-Executive Director. MCompany.	Visiting Professor of Infrastructure Management. Contributor.
A6	Director of AMRC.	Co-director of the MC Centre. Content expert. Contributor.
A7	Senior Research Fellow, Cranfield School of Management.	Project Manager. Content expert.
A5	Marketing and Project Manager	Coordinator of the MC Centre (MCompany) during 2002
A4	Consultant in Strategic Consultancy.	Researcher Consultant (MCompany). In charge of adapting academic research into practitioner's format.
H8B	Marketing Officer.	Contributor.
H9	Client Manager (Highways).	Contributor.
H11	Project director (Highways).	Contributor.
H12	Director of Business Transformation.	Contributor.
H13	Director of LG Services.	Assists to the client events. Initiator of the implementation phase of the project.
H14	Client Manager (Rail).	Contributor.
H15	Senior Consultant (LG Services).	Project Manager. Project leader in the implementation phase of the project.
H16	Senior Consultant (LG Services).	Project Director of the implementation phase (2004-2005).
H17	Director of H Highways (client).	Project Sponsor for the implementation in H Highways.
H18	Director of LG Consultancy.	Project Director of the implementation phase (2005-2006).
Javier Marcos	Doctoral student and Research Assistant.	Researcher.

Table 2.3. Project team for project 1 HRO. Source: MCC proposal research teams for projects.

The Director of Strategic Consultancy and HRO project leader (H8) left MCompany in March 2004. This created a vacuum that was not filled. Furthermore, the departure of the Research Consultant (A4) in April 2004 opened a period of several months without any activity in this project, and eventually, the stagnation of the project. Surprisingly, in August 2004 one of the Senior Consultants in Local Government services approached Cranfield School of Management interested in the HRO project. He was seeking help to put together a proposal to implement HRO principles in a County Council's Transport Services department to enhance service quality and reliability across the unit (2004 08 04 HRO Cranfield proposal Wltsh). Based on findings from HRO research, diagnostic and consultancy tools were developed. These tools and techniques were refined and incorporated into the proposal for the County Council's Transport Services department. This proposal was unsuccessful and the client communicated its decision to implement a more traditional improvement plan (H15, Senior Consultant – LG Services – 26/01/2006).

At the end of 2005, after two previous failed improvement plans (HH SAB Perform. Improvement Plan 05/02/2005 and HH Mpetus Improvement Regime 12/01/2006) the H County Council Highways department (hereafter H Highways) commissioned a joint MCompany–Cranfield implementation of a High Reliability Change Programme, giving birth to a third epoch in the HRO project, the implementation of research findings or 'product development' phase. The Change Programme was divided into four phases, the first three to be implemented at the level of managers in the organisation, and the fourth a large scale roll out across the entire organisation (HRO HH Proposal 14/12/2006). Phases one to three were completed in April 2006. At the time of writing this thesis, the fourth phase has been agreed and is ready to start (H15, Senior Consultant – LG Services – 26/01/2006).

2.4.2.3. Deliverables and perceived success of project 1 HRO

Overall, HRO was perceived as a highly successful research project. Both Cranfield School of Management and MCompany staff regarded the various outcomes of this project as very satisfactory. For instance, when asked about his overall opinion, the Non-Executive Director, and one of the founders of MC Centre stated:

> "I think HRO was *very successful*, I thought that was *extremely good*. Because it excited our clients, my whole interest in setting this up from a commercial point of view was getting our clients interested so that they would talk to us at board level about what else can we do now together, HRO fitted that, absolutely, it was *terrific*, just pressed the right buttons". (A3, Non-Executive Director, 24/01/2006). Emphasis added.

The opinion of the Director of AMRC and co-director of the Centre regarding the HRO project is also very positive:

> "HRO has been much more productive, I think it has given us rather less in terms of academic output but pushed it right through to application in HH and therefore developed a design tool, I think it's got huge potential in lots of sectors" (A6, AMRC Director, 14/03/2006).

The amount of outputs and opportunities to engage with clients were seen as elements that underpinned the perception of success, as the following quote illustrates:

> "I think HRO has been successful because I think firstly it's a reasonable project, I think it's a novel area, it was conducted using a systematic review methodology which we're still writing up as an academic contribution, so I think in terms of project mechanics, it was good, we had a significant amount of dinners, we've had a significant amount of outputs in terms of articles and practitioner articles which you largely drove, so they had a fair amount of profile from HRO" (A7, Senior Research Fellow, 27/03/2006).

Within MCompany, two individuals were very closely involved across the different projects: A5, the coordinator of the MC Centre during 2002 and then A4, the Research Consultant. Both supported the idea that HRO was a successful project.

> "This is the most successful [project] because: 1) look at the number of stars [events with clients figure 2.8], so interaction was quite high; 2) something has actually come out of it at the end of the day, which is paid work, so it might have taken a

> long time, yes, but paid work has come out of it" (A5, Marketing Manager and MC Centre Coordinator, 20/01/2006).

> "HRO worked for me and HRO would have continued to work for me" (A4, Research Consultant, 20/03/2006).

Interestingly, even people who were only peripherally involved in the HRO project (in the sense that they only attended public events with MCompany's clients) thought it was very valuable.

> "The HRO was a very convenient high level thing that was a real grabber in relevant markets, it was in sectors that we wanted to be, so that was interesting" (AM27, Senior Consultant, 13/02/2006).

> "I think out of them I would say HRO and PPP, I know I'm biased [because she was the PPP project leader], were the best ones" (P20, Director Business Development, 23/01/2003).

These perceptions of success reported above, naturally coincide with the opinion of the project leader who claimed,

> "I think to be honest the HRO one has been a success" (H8, Director of Strategic Consultancy, 13/04/2006).

2.4.3. Project 2. Public–Private Partnerships

2.4.3.1. *Scope and focus of the public–private partnerships project*

The first MCompany–Cranfield research project, SMoLTA (The MCompany-Cranfield Centre, 2001), identified Public–Private Partnership (PPP) and Private Finance Initiative (PFI) as styles of contracting that are fundamentally changing the traditional provider–client relationships, and becoming increasingly common vehicles for service delivery in infrastructure management. Taking this finding into consideration, and given that much of MCompany's Managed Services business was provided through PPP arrangements, project 2 set out to address strategic PPP issues (MCC Towards a 5 year strategy 23/08/2002).

According to the approach outlined in section 2.4.1 (Overall approach to conducting the research projects), the first part of the project consisted of a systematic review of the literature. The aim of this review was to synthesise, interpret, and draw implications of the probable causes underlying successful (and unsuccessful) partnerships. Specifically, the focus of the research was on gaining a deeper understanding of how PPPs can be managed to ensure the successful delivery of their objectives, aiming to answer the question *"what makes a PPP succeed or fail?"* (PPP Protocol final 26/05/2003).

The systematic review identified 242 potentially relevant sources, out of which 57 were selected (39 academic papers and 18 practitioner and policy reports). A process of inductive synthesis provided 281 emergent themes, grouped into 80 categories that were synthesised into ten activity clusters and further grouped into two high order categories. In October 2004, the findings of the research were published in a report entitled

"Managing PPPs" (MCompany Cranfield Centre, 2004). The research findings identified two crucial groups of practices, which, if led and managed well, were likely to result in successful PPPs. The first group of practices addressed the *design and organisation of the partnership*. This included: identifying the services/products pertinent to delivery through the PPP; selecting suitable partners; defining and setting up the contract within a robust but flexible framework; identifying and allocating operational and financial risks and measuring the PPP's performance holistically in order to determine its net contribution. The second group of activities focused on *developing and managing the relationship*. In successful PPPs this was achieved by committing to shared objectives; building and sustaining trust; maintaining a collaborative culture and supporting the flow of information within the partnership structures.

Research findings suggested that for a PPP to be successful, organisations must constantly redefine, redesign and improve their management of these activities in a dynamic fashion (MCompany Cranfield Centre, 2004). This evolving nature of partnerships was captured in the diagram below (figure 2.9).
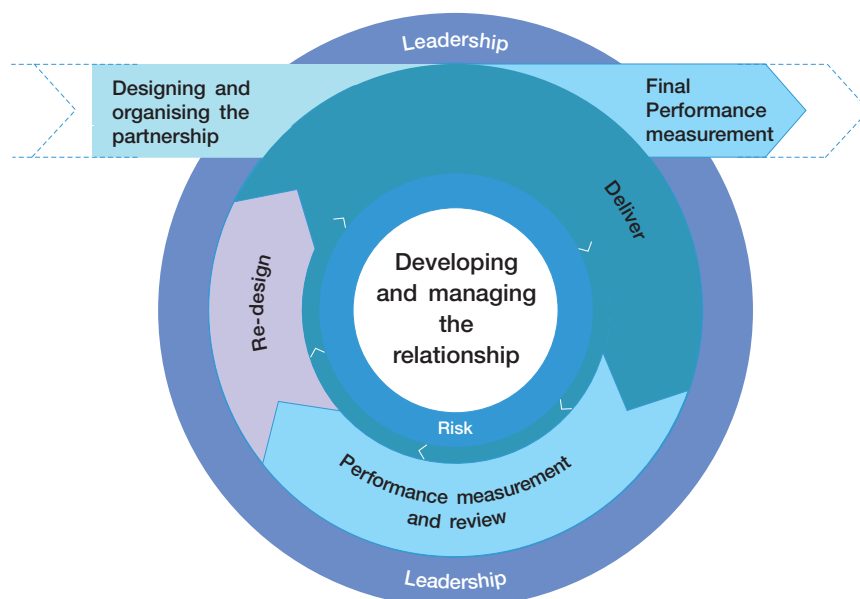
Figure 2.9. A dynamic model for managing PPPs

2.4.3.2. The public–private partnerships project team

In order to carry out the research, a project team was formed. Contrary to the rest of the projects where most participants were ascribed to Management Consultancy, staff from both Managed Services and Project Services were involved. An external contributor from the Government Agency, with a wide experience in public sector-related research joined the team and participated and contributed to the whole project. The project team was formed by the people identified in the table 2.4. (MCC proposal research teams for projects 28/10/2002).

Designation	Position in the organisation	Role in project 2. PPP
P19	Managing Director of Government Services.	Project sponsor. Active contributor.
P20	Director of Business Development.	Project leader.
P21	Service Director (highways).	Contributor.
P22	Associate Director (Public Services Research) Government Agency.	Active contributor.
P23	Project Director (roads & rail).	Contributor.
A1	Chief Executive Officer MCompany.	Chairman of the MC Centre. Contributor.
A2	Managing Director of Management Consultancy.	Co-director of the MC Centre. Contributor.
A3	Non-Executive Director MCompany.	Visiting professor of Infrastructure Management. Contributor.
A4	Consultant in Strategic Consultancy.	Researcher Consultant (MCompany). In charge of adapting academic research into practitioner's format.
A7	Senior Research Fellow. Cranfield School of Management.	Project Manager. .
A6	Director of Research Cranfield School of Management and director of the AMRC.	Co-director of the MC Centre. Contributor.
H11	Project Director (Highways).	Contributor.
Javier Marcos	Doctoral student and Research Assistant.	Researcher.

Table 2.4. Project team for project 2, PPP. Source: compiled by author.

The PPP project was well planned from the beginning (P19, Managing Director of Government Services, 16/01/2006). Soon after the research team was formed and started their work, a project plan with realistic milestones, responsibilities and deadlines, all documented in writing, was agreed (Field notes PPP Meet 1 28/01/2003). Communications were frequent both at regular team meetings (held once a month) and via e-mail. Once the systematic review was conducted and some initial findings were produced (Descriptive Analysis Complete 10/06/2003), representatives from three key clients were invited to contribute to the project and were asked the extent to which their professional experience in managing PPPs coincided with the findings from the review (Field notes PPP meet 9-Challg Meet 07/10/2003).

In addition to reviewing published studies and reports, the team conducted a series of interviews with various organisations which were involved in PPPs including a local authority, a contractor/operator, and consultants (PPP Research Forum - Case Study Interviews 08/09/2003). On the 22nd June 2004, senior leaders from public and private organisations were invited to an event in London where findings from the research were presented (2004 06 22 PPP Event presentation). The event was designed to promote interactions and facilitate an interactive debate. After presenting the findings, all the attendees were invited to break into small groups. Each group discussed the role of leaders in achieving successful partnerships by addressing a number of key strategic questions posed to them (Key questions raised in our exploratory work 04/07/2004). The discussions were tape-recorded and notes taken by several team members who acted as 'reporters' (PPP Event -Reporters Guide 22/06/2004). The key arguments from the group were summarised and incorporated into the final report (Summary discussion tables 1-5 22/06/2004).

2.4.3.3. Deliverables and perceived success of project 2 PPP

The PPP project received very mixed assessments depending on the informant. Some participants thought the project was successful in delivering the objectives it set out to deliver, others claimed its outcomes could have been better and there were people who rated the project badly. The key output of the project was a report (MCompany Cranfield Centre, 2004) containing the findings from the review, and the discussions from a series of project meetings and events. There were also two client events (Challenge meeting, Cranfield 07/10/2003 and Client Event, London 22/06/2004).

Among those who thought the project was unsuccessful was MCompany's Research Consultant, who was critical of the level of output the project achieved and the lack of follow up:

> "PPP they never did any development, there was no research on the MCompany
> side, there was no development … that's why if you look at the product HRO: lots
> of events with industry; PPP: a paper" (A4, Research Consultant, 20 March 2006).

The Research Consultant stressed the fact that after the report had been published no further development was carried out.

> "That is criminal that PPP, that P20 didn't drive that forward, all that says to me is
> that P20 had no conviction in what PPP had worked up" (A4, Research Consultant,
> 20/03/2006).

Arguably, one of the reasons the project was perceived to be unsuccessful was because it contributed little to MCompany's current understanding of PPPs (this aspect will be extensively discussed in chapters 7, 8, and 9 when the content dimension of the projects is analysed):

> "And all that then did was to confirm what I already believed I suppose, but it's just
> given me more confidence around it I suppose" (P19, Managing Director of
> Government Services, 20/12/2004).

The lack of novelty of the PPP research findings was detrimental to the overall perception of the project.

> "There's an awful lot of fairly obvious sort of stuff (P22, Associate Director - Public
> Services Research - Government Agency, 10/01/2005).

For some people the PPP project only had a limited impact.

> "So in terms of the degree to which the nuggets that are in the document have
> impacted on how we deliver our PPPs, I would say very limited at the moment"
> (P19, Managing Director of Government Services, 20/12/2004).

Not all the assessments were as critical as the ones presented above. It was also believed that the work undertaken had some value and was *partially successful*.

> "It was successful in so far as it went, I think it took longer than it needed to have
> taken, I think we spent far too much time redefining the objectives and far too little
> time developing the actual case studies etc" (P23, Project Director - roads & rail -,
> 01/02/2006).

The PPP project was also perceived successful by some participants who argued it provided valuable outputs for MCompany. For instance, the project leader claimed:

> "Well I thought the scope of the project was the right thing to do; I thought it was a good project overall; I thought the [evidence-informed approach] methodology worked really well. I think that the potential benefit of doing these kinds of projects to both private sector and a university are clearly very powerful, they've got lots of potential" (P20, Director of Business Development, 23/01/2006).

The integration of academic research with practitioner knowledge in a collaborative way seemed to explain the positive assessments of the initiative as the project sponsor recognised:

> "But overall, I think that we finished up with something that was worthwhile and valuable, and I think the two main planks of that value come out of, or maybe three, well one comes out of all the work that you did with desk research, the academic research. The second strand I think was about the engagement with our clients" (P19, Managing Director of Government Services, 20/12/2004).

2.4.4. Project 3. Asset Management

2.4.4.1. Scope and focus of the Asset Management project

The third project, Asset Management (AssM), was defined as a result of MCompany's interest in this area and the findings from the SMoLTA research report (The MCompany-Cranfield Centre, 2001). This research revealed that the management of infrastructure assets was increasingly being integrated into the overall business strategy of many organisations. The SMoLTA report pointed out that Government policy, regulatory pressures, financial constraints and stakeholder demands were forcing these organisations to respond more effectively by improving performance, and adopting more innovative approaches in the way they manage their assets. The report showed how governments, privatised agencies and commercial companies were actively re-assessing how their infrastructure is managed, in order to deliver a better service to users and better value for money. This project set out to address potential questions raised by this situation (AssM Field notes Meeting 0 27/02/2003).

Internal discussions within the asset management project team (see its participants below), suggested that over the last years changing stakeholder requirements had forced large assets owners to change the way they manage their assets. Organisations had had difficulties in anticipating and forecasting changes in stakeholder requirements, and therefore had had difficulties in determining the right asset management policies which are sustainable into the future. In order to tackle these issues two initial research questions were identified: *"how can one understand evolving stakeholders' requirements and implement asset management policies today which are sustainable in the future?"* and *"How does one anticipate those changes and develop appropriate asset management policies?"* (Field notes AssM meet 1 04/08/2003)

The researchers at Cranfield conducted some exploratory work, but did not find available research related to infrastructure asset management that could inform these

research questions (AssM - Keywords and search results 14/10/2003). This was unsurprising given the nature of the questions, particularly their emphasis on anticipating events. The Cranfield team explained that evidence-informed approaches to knowledge rely on published evidence; in other words they are backward-looking not forward-looking. The project team had then two options: (1) to take a new approach to the current question or, (2) to ask a different question (Field notes AssM meet 2 23/09/2003).

The team implicitly decided to take a new approach to the current question, convinced that the worthwhile issue to tackle was that 'organisations have had difficulties in anticipating and responding to changing stakeholder requirements' (Field notes AssM meet 3. 29/09/2003). One of these requirements was to deliver sustainable value and reliability over the long term. The questions were revisited arguing that organisations must rise to the challenge of understanding *"the characteristics of organisations that manage a strategy that is sustainable in the long term and enables successful responsiveness to changing stakeholder and external context requirements"* (MP AssetM Rev Protocol 02/03/2004).

The idea of organisational resilience was identified as a promising approach to tackle this issue. It was argued that in the face of a changing environment with regulatory upheaval, geopolitical shocks, industry restructuring, changing consumer demands, and non-traditional competitors, resilience is required. Resilience is not responding to one-off crises or rebounding from a setback – it is the ability to continuously anticipate and adapt. It is the aspiration for 'zero trauma' e.g. breaking the cycle of 'success–failure–protracted recovery' in favour of 'success–flexible effective response to change–success'. Resilience requires organisations to develop a varied range of abilities and competences (Resilience - Scoping Study 12/01/2004).

After some initial exploratory work, a systematic review of the field was conducted with the aim of understanding the features of organisational resilience. Specifically, the review's objectives were to dimensionalise the concept of organisational resilience, to identify design principles for organisations that wish to strengthen their response capabilities, and to understand the strategic perspective of resilient organisations. Over 60 systematic searches of five citation databases were conducted, retrieving 364,848 articles which were progressively narrowed down to 203 studies of which 28 were included for review (Resilience keywords and Search results 21/01/2004). This project was not finished, primarily for reasons related to continuity of people, which leads us to a description of the people involved.

2.4.4.2. *The Asset Management project team*

The asset management research team was formed primarily by consultants from Decision Analytics, a department within Management Consultancy. Unlike the other projects no member of MCompany's board acted as a project sponsor. The project team was formed by the following people (MCC proposal research teams for projects 28/10/2002):

Designation	Position in the organisation	Role in project 3. AssM
AM24	Director of Decision Analytics.	Project leader.
AM25	Project Director. Decision Analytics.	Contributor.
AM26	Project Director. Decision Analytics.	Contributor.
AM27	Senior consultant.	Contributor.
H8	Director of Strategic Consultancy.	Contributor.
H11	Project director (Highways).	Contributor.
A4	Consultant in Strategic Consultancy.	MC Centre Researcher (MCompany). 2003-2004. In charge of turning some findings in academic format into practitioner's format.
A7	Senior Research Fellow, Cranfield School of Management.	MC Centre researcher (Cranfield) and Project Manager.
A6	Director of AMRC.	Co-director of the MC Centre. Contributor.
AM28	Sector Leader (Water).	Project leader (from February 2004).
Javier Marcos	Doctoral student and Research Assistant.	Researcher.

Table 2.5. Participants in project 3 Asset Management. Source: compiled by author.

In January 2004, the Project Leader (AM24) left MCompany, and a former PCompany Sector Leader (AM28) was formally appointed to take over. The new project leader was thoroughly briefed on the work undertaken so far. It took him a few months to understand the work already done. In the summer of 2004, when he was clear about the direction he wanted to give to the project, and was ready to resume the research activities, rumours about the uncertain future of the MC Centre stopped him from continuing the project (AM28, Sector Leader – Water –, 20/02/2006). No report or event was ever produced, and the project went as far as to conduct some academic research (Meeting with AM28 & briefing 04/03/2004) and hold the meetings that appear in Figure 2.8.

2.4.4.3. *Deliverables and perceived success of project 3*

Despite not being finished, the project was seen as a promising endeavour, severely affected by the context, in particular the departure of its original project leader.

> "Overall I think it started well and I think it had potentially a good defined question or set of questions that we wanted to find, and unfortunately it never got through to that point" (AM25, Project Director, 13/02/2006).

The discussions held in project meetings were appreciated, and the direction the project started to take was promising, as the following two project members recognised:

> "This one (project 3) was again interesting, could have proved to be very interesting but was killed by circumstances" (A4, Research Consultant, 20/03/2006).

> "I was a little disappointed that the asset management project stalled when it did, so I would have liked to have taken through the asset management project a bit further" (AM28, Sector Leader - Water - 20/02/2006).

Beyond the particular circumstances that surrounded the project, the process of agreeing a common start point for the research proved difficult and this limited the overall development of the project.

> "Asset management I felt really got nowhere very much and then … I actually felt that was incredibly difficult to focus, it's a really broad topic, it means totally different things to lots of different people and trying to focus on that one was actually extremely difficult" (AM26, Project Director. Decision Analytics, 21/03/2006).

Overall, the asset management project was believed to have been largely unsuccessful in delivering its intended outcomes.

> "I think asset management [was unsuccessful] because we couldn't actually see what we were going to get out at the end of it" (H11, Project director -Highways-, 08/02/2006).

2.4.5. Project 4. Private finance initiative

The SMoLTA research (The MCompany-Cranfield Centre, 2001) revealed the increasing importance of private finance initiatives (PFI) as a mechanism to design and build large infrastructure assets. This finding coupled with MCompany's expertise in procurement consultancy, led to the decision to undertake research in this area. The Managing Director for Management Consultancy (A2) assumed both the leadership and sponsorship of the project (MCC proposal research teams for projects 28/10/2002). In December 2002, he organised a meeting to form the project team and to set the direction for the research on PFI/Funding. The meeting was attended by the Cranfield Senior Research Fellow (A7), the Visiting Professor (A3), the MC Centre Coordinator and Marketing Manager (A5), and five senior consultants who specialise in procurement consultancy services (PFI2, PFI3, PFI4, PFI5, and PFI6).

The potential focus of the research was debated and two possible directions were identified. The first was to explore ways in which to improve the effectiveness of bid processes; the second was the business case for PFI, investigating the measurable improvements to value for money and service delivery through PFI. The project team considered and discussed involving organisations that could act as case studies in the research process (Notes of PFI forum meeting 1 04/12/2002).

The next meeting was scheduled for January 2003. The evidence-informed approach to the co-production of management knowledge (Approach conduct Forums and SRs v2 18/10/2002) was explained. The team engaged in lengthy discussions to try to identify and agree the objectives of the project. The attendees struggled to find a clear and viable research question to address caused by a lack of definition of the scope: "Is it about PFI or is it about funding in general?"(A7, Senior research fellow, 28/01/2003). Towards the end of the meeting, the Managing Director of Management Consultancy and project leader (A2) summarised the discussions, and suggested the Cranfield team conducted initial exploratory searches considering the alternatives proposed. The team would reconvene in a subsequent meeting to see if some progress could be made. This

third meeting was never called and the PFI project never progressed beyond the discussions held at those two meetings (PFI meeting 2 notes 28/01/2003).

2.4.6. Project 5. Business Transformation

The last project, like the other four, was also informed by the SMoLTA research (The MCompany-Cranfield Centre, 2001) research findings. This project was also seen as an opportunity to raise the profile of Business Transformation, a newly-created department within Management Consultancy (MCC Towards a 5 year strategy 23/08/2001). This project was going to be led by the Director of Business Transformation (H12). Informal conversations with Cranfield researchers and the Research Consultant were held to set the initiation of the project at various points in time. Several unsuccessful attempts were made to fix a meeting to form the project team and to start the research. Time went by, and this project was simply not initiated.

Despite clear synergies with the other projects (Integration of research streams diagram 04/02/2004), the availability of resources to conduct the research and Cranfield's expertise in this area, which was recognised by the Director of Business Transformation (H12, Director of Business Transformation, 09/03/2006), this project never started.

2.5. Summary

This chapter has presented MCompany as a fast-growing business that demonstrated a remarkable ability to change and exploit market opportunities. It has also described how MCompany decided to engage in a knowledge co-production partnership with Cranfield School of Management to bring about 'thought leadership' to sustain its growth in a dynamic and rapidly evolving environment. An initial satisfactory research project (SMoLTA) led to the foundation of the MC Centre, a jointly managed research that aimed to become *"the foremost international centre for applied knowledge in infrastructure management"*.

A chronological approach has been used to divide the MC Centre's history into four recognisable stages: inception, establishment, expansion and decay. In each of these stages, key events, relevant episodes and influences have been described.

The last section of the chapter has been devoted to explaining the five evidence-informed research projects that constitute the embedded units of analysis of the case study of this thesis. The overall aim of the chapter has been to tell the story of 'what happened', without exploring 'how it happened' or 'why it happened'.

Given that all the conditions for MCompany to exploit and realise the benefits of learning and knowledge were present, and given the high calibre of both MCompany and Cranfield School of Management in their respective areas, it is intriguing to understand 'how' and 'why' the research projects achieved such different learning and knowledge outcomes.

In the next chapter, the theoretical background of the thesis is presented. Organisational Learning (OL) literature is reviewed, with the aim of identifying learning processes that may help explain the differences between the research projects of the MC Centre and their contrasting outcomes.

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3. THEORETICAL BACKGROUND: ORGANISATIONAL LEARNING

3.1. Introduction

The previous chapter presented a description of the case study and described the organisations involved, the MC Centre and the research projects. This chapter aims to provide a theoretical background to help the analysis of the case. In selecting an appropriate theoretical domain to inform the case study it is important to think about the purpose of the MC Centre and the research projects that were defined. The purpose for MCompany in establishing the relationship with Cranfield School of Management was to bring about 'thought leadership'. This concept, in the context of MCompany, meant 'management development', 'product development', and 'brand development'[1]. These concepts are described in more detail below.

Management development refers to creating conditions in which consultants can widen their knowledge and understanding on selected managerial issues, so they can improve their practice in those areas. Management development in the context of this study is tightly linked to learning. This chapter focuses on providing theoretical grounding for reviewing the literature on Organisational Learning (OL). *Product development* refers to the production of consultancy offerings. In so doing, practitioner expertise is combined with academic evidence to create new knowledge. Chapter 4 reviews organisational knowledge and enablers and barriers to knowledge processes. *Brand development* refers to undertaking initiatives in order for MCompany to be perceived as a leading provider of value added services in its selected niche markets. This concept is related to professional marketing and is beyond the purpose of the thesis, thus is only briefly mentioned.

Selecting OL as the theoretical background was not only a choice driven by convenience. Alternative organisational theories were considered carefully, but they were found to be either inappropriate or able to provide only a partial explanation of the case. For example, the resource-based view (RBV) of the firm (Barney, 1991; Wernerfelt, 1984) may have helped to understand the value of intangible resources, such as learning capabilities, in generating competitive advantage. However, the RBV does not provide a full understanding of the subtle mechanisms that link research utilisation to bring about learning and knowledge and subsequently strategic competitive advantage. Institutional theory (Kostova, 1999; Staw and Epstein, 2000; Zeitz, Mittal et

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[1] How the team of academics and consultants arrived at these three concepts is reported in detail in chapter 6.

al., 1999) could provide a theoretical 'lens' through which to explore why organisations adopt management ideas that are promulgated in the marketplace. However, the aim of the MC Centre was not to adopt established ideas but rather to create novel ideas through a unique research-based approach. This thesis explores the case primarily through the lenses of OL theories. However, where appropriate, a number of complementary theories and concepts from organisational and management studies and related areas, such as knowledge management or work psychology, are used to help to explain the case.

OL is useful in illuminating how the development of knowledge and learning occurs in an organisational context. In this chapter, it is argued that the approach to learning that best addresses this case study is one that acknowledges the cognitive, behavioural and social paradigms of learning (Crossan, Lane et al., 1999; Elkjaer, 2004). According to OL theory, learning is thought to result when cognition and action are linked in self-reinforcing ways (Weick, 2002). Thought processes influence action, as much as action influences thinking when individuals make sense of their actions. Social and cognitive processes also combine to foster OL. Learning and knowledge development are seen as enacted and situated in activities and work practices. This research places an emphasis on exploring individuals in their work setting and considers individuals, groups and organisations as appropriate levels of analysis.

Considering the above, the purpose of this chapter is to position the research within the existing literature on learning and knowledge in organisations so as to provide a theoretical foundation to the phenomena under study. Specifically, this chapter has three key aims. Firstly, to outline the perspective of learning and knowledge adopted in this research, justifying how knowledge and learning are seen as having a behavioural, cognitive and social nature. Secondly, to briefly describe important aspects of organisational knowledge and learning: conceptualisations, types of learning, levels and processes. Thirdly, to provide a platform to inform a systematic review of knowledge processes within and across organisations (see chapter 4).

3.2. Knowledge and learning in organisations

3.2.1. Organisational knowledge

Knowledge is a complex, multifaceted construct and difficult to define. This subsection outlines a number of traditional perspectives of knowledge and presents a number of common typologies. Finally a schematic picture of the construct 'knowledge' is provided.

3.2.1.1. *Towards a conceptualisation of knowledge*

When defining a complex phenomenon such as knowledge it is often easier to say what it is not, rather than what it is. Boisot (2002), for example, distinguishes knowledge from information and data. He argues that data is located in the world, whereas knowledge is located in agents, and information plays a mediating role between them. For Boisot, only some data will have informative value, and when this happens, it will modify an agent's expectations and dispositions to act in particular ways. He terms this their knowledge base (p. 68). Thus, data may be viewed as symbols or representations

of some aspects of reality. When data is placed within a framework of understanding and is useful, it becomes information. Information, therefore, becomes knowledge when it is used as a basis for guiding action.

The data-information-knowledge hierarchy suggesting that knowledge is a product of data and information has been recently questioned. Braganza (2004) proposes a top-down perspective of knowledge-information-data, and argues that knowledge is more than data and information. Knowledge is seen as a mechanism to achieve higher-order organisational strategies. Knowledge resides in each cross-functional business process. Information is used in problem solving and is located in work practices. Data are constituent elements of information and are derived from information (Braganza, 2004, p.355).

The relationship between knowledge and action is also highlighted by Nonaka (1994) who argues that information is a flow of messages, while knowledge is created and organised by the flow of information and is connected to the beliefs of the individual. This conception of knowledge derives from the traditional view of knowledge as a 'justified true belief'. What Nonaka stresses is not so much the truthfulness aspect of this view of knowledge, but the fact that individuals engage in processes of justifying personal beliefs in search of the truth. In this sense, knowledge is something that develops retrospectively as a way of making sense of action in terms of acceptable rationales, rather than an objective entity that pre-determines decisions (Daft and Weick, 1984).

Knowledge as asset	Knowledge as process
An entity detached from the individual. Closely related to data and information.	Knowledge is located within agents' actions, and can be seen as a process of using information to guide action.
Knowledge as a justified true belief where truthfulness is critical.	Processes of justifying personal beliefs in search of truth.
Something that can be possessed, transferred, and stored independently from its context.	It is a process and the dynamics of knowledge production, deployment and distribution vary from organisation to organisation.
A tool of knowing.	'Knowing' embedded in action, in what people do.
A given.	Continually negotiated, dynamic and provisional.

Table 3.1 Critical elements for studying knowledge in organisations from two different approaches. Source: compiled by author.

Although recent conceptualisations of knowledge stress its inextricable relationship with action, there is still a sizeable body of literature which considers knowledge as an independent entity, separated from the actor. This is what Cook and Brown (1999) term the 'epistemologies of knowledge', that distinguish between knowledge and knowing. These authors argue that knowledge is grounded in the 'epistemology of possession' whereby knowledge is treated as something that individuals and groups possess. This conception of knowledge is arguably limited since "not all of what is known is captured by this understanding of knowledge" (Cook and Brown, 1999 p.382). Knowledge not only resides in concepts, skills, stories and interpretive frames, but also is embedded in action. This form of knowledge called 'knowing' is grounded in an 'epistemology of practice', embedded in what people do and thus, is tightly linked to action. Knowledge is seen as a tool of knowing and knowing is an aspect of our interaction with the social

and physical world (Cook and Brown, 1999). The interplay between knowledge and knowing then becomes a source of new knowledge.

Overall, conceptions of knowledge can be summarised into two groups: knowledge as an asset and knowledge as a process. Table 3.1 recaps the key aspects of each conception.

3.2.1.2. Typologies of knowledge

Considerable theoretical and empirical effort has been devoted to develop typologies of knowledge in the organisational knowledge, learning and capabilities literature; perhaps the mostly cited is the differentiation between *tacit* and *explicit* knowledge. This typology can be traced back to Polanyi (1962; 1966), who argued that explicit knowledge is primarily codified, whilst tacit knowledge is highly personal, often subjective, and thus not easy to verbalise. As tacit knowledge is often embedded in routines that are normally difficult to transmit and absorb, it has generated competitive advantage for firms (Grant, 1996a; Nelson and Winter, 1982; Peteraf, 1993). Nonaka and Takeuchi (1995) distinguish between tacit and explicit knowledge in organisations, arguing that the interplay between tacit and explicit knowledge, lies at the heart of knowledge creation processes.

The tacit / explicit distinction has been widely used to develop various typologies of knowledge. For instance, Cook and Brown (1999) define four types of knowledge: concepts (individual – explicit), stories (group – explicit), skills (tacit – individual) and genres (group – tacit). Spender (1996b) also uses the individual vs. group and the implicit vs. explicit dimensions to identify four forms of organisational knowledge: *conscious* (explicit knowledge held by the individual), *objectified* (explicit knowledge held by the organisation), *automatic* (preconscious individual knowledge) and *collective* (context-dependent knowledge manifested in the practice of the organisation).

These typologies have been criticised and considered limited in helping to understand organisational knowledge, since they are based on systematic similarities and differences that are not clearly discrete, separate and stable (Tsoukas, 1996 p.14). Tsoukas argues that tacit knowledge can be expressed with words and that explicit knowledge is grounded on a tacit component, thus they should not be seen as two separate types of knowledge. Similarly, individual knowledge is possible because of people's engagement in social practices. Therefore individual knowledge is inseparable from social knowledge. Inkpen and Dinur (1998) also argue that "the distinction between explicit and tacit should not be viewed as a dichotomy but as a spectrum with the two knowledge types at either end" (p.456).

Blackler (2002) elaborates a different typology based on where knowledge resides, distinguishing among embrained, embodied, encultured, embedded, and encoded knowledge. *Embrained* knowledge is better described as skills and cognitive abilities, whilst *embodied* knowledge resides in individual's physical capacities, normally acquired by doing things. *Encultured* knowledge is gained through processes of socialisation and acculturation, and is primarily comprised of values and shared understandings. *Embedded* knowledge resides in routines and systems and can be appreciated in terms of the relationships and resource allocations that occur within the

organisation. Finally, *encoded* knowledge refers to information captured in signs and symbols. Beyond this classification, Blackler argues that "attention should be focused on the systems through which knowing and doing are achieved" (2002 p.59).

In this thesis, the dual nature of knowledge, both as an asset and as a process, is acknowledged and these two views are considered complementary rather than opposed. In reviewing the literature, an open approach is taken to incorporate quality contributions grounded on both perspectives of knowledge. In the next chapter this will become evident. The reader will appreciate that concepts such as 'knowledge transfer', 'adoption of practices', 'acquisition of knowledge', 'knowledge depreciation' 'absorptive capacity', 'knowledge representations', etc. are used. These concepts suggest a conceptualisation of knowledge as an 'asset'. However, the systematic review also identified contributions that refer to 'knowledge flows', 'sensemaking', 'knowledge sharing', 'knowledge development', etc. all of which conceptualise knowledge as a process.

3.2.2. Organisational learning

Organisational learning (OL) is a field that has attracted much interest in both academic and practitioner circles over the last three decades. However, no theory or model of OL is widely accepted, resulting in a very fragmented area of study (Crossan, Lane et al., 1995; Easterby-Smith, 1997; Fiol and Lyles, 1985; Huber, 1991; Miner and Mezias, 1996; Nicolini and Menzar, 1995; Shrivastava, 1983; Vince, Sutcliffe et al., 2002; Weick, 1991). The reasons for this fragmentation stem in part from the difficulty in defining learning and knowledge, resulting in inconsistent terminology and in many cases studies which lack transparency about the assumptions made when studying OL (Crossan, Lane et al., 1995).

In order to provide a brief overview of critical debates found in the literature and to position this thesis within the field of OL, a discussion of types of learning, levels of learning and learning processes is presented below. The subsection titled *conceptualisation of learning* aims to develop a definition of organisational learning that incorporates cognitive, behavioural and social aspects of learning. The subsection titled *types of learning* summarises important distinctions of the learning phenomena that exist in the literature. The subsection on *levels of learning* proposes and justifies the adoption of a multi-level approach to the study of learning. The last subsection presents important *learning processes* as a way to further clarify the components into which learning might be divided.

This review of the OL field is narrative and descriptive rather than comprehensive and systematic. Its purpose is not to thoroughly review what is known in the field; given the size of the field this would be unfeasible. Instead, the aim is to sketch out critical concepts, ideas and frameworks from the field of organisational learning. It aims to provide a foundation for the systematic review on enablers and barriers to knowledge and learning within and across organisations that is presented in the next chapter.

3.2.2.1. Conceptualisation of learning

A myriad of definitions of OL exist, probably as many as there are authors in the field, or at least as many as there are interpretations of different existing schools of thought in

the field. Most definitions of OL ascribe to either a cognitive, behavioural or social conceptualisation of learning.

Early contributions to the field are largely *behavioural*. For instance, Cyert and March (1963) framed OL as the relative permanent change in organisational knowledge by experience. This emphasis on action and behaviour dominated a large number of contributions to the field for more than two decades. The stress of the behavioural approach to OL is on how organisations deploy resources to learn either from within (exploitation) or from the outside (exploration) (Herriott, Levinthal et al., 1985; March, 1991a), how decisions are made (Levitt and March, 1988) and how actions are taken in light of modes of interpretation (Daft and Weick, 1984).

Cognitive-based learning is best understood as the acquisition of information by refining what is already known. Cognitive OL theory draws on work by Bruner et al. (1956), Murphy and Medin (1985) and Murphy and Allopenna (1994) who addressed learning in individuals as the mental processing of information, category learning and hypothesis testing. Cognitive approaches to OL have had many advocates, who argue that OL implies changes in organisational cognitive systems (Starbuck and Hedberg, 2001). This change may occur by changing the way in which the organisation works, a process that has become known as single-loop learning. Alternatively, a more profound change may occur if the change alters the values and beliefs associated with the organisation's operations; this has been termed double-loop learning (Argyris and Schön, 1978). Cognitive perspectives see learning as an adaptive rational process by which individuals make inferences about the consequences of their actions. Cognition and preferences affect individual behaviour, which in turn affects organisational choice. The choices made affect the environment which in turn affects individual cognitions and preferences (March and Olsen, 1975).

OL contributors seldom adopt a behavioural or a cognitive position exclusively. On the contrary, a number of authors embrace a dual *cognitive-behavioural* stance. Fiol and Lyles's (1985) review of the OL literature leads them to conclude that learning is "the development of insights, knowledge, and associations between past actions, the effectiveness of those actions and future actions" (p.811). Later reviews of the OL field (Huber, 1991; Miller, 1996) and key empirical contributions (Inkpen and Crossan, 1995; Leroy and Ramanantsoa, 1997), reveal an increasingly broad agreement that both cognition and behaviour are important elements in a definition of OL.

Other authors emphasise the social and relational aspects of learning (Brown and Duguid, 1991; Lave and Wenger, 1991; Wenger, 2000). According to the sociocultural approach, learning is influenced by interpersonal relationships and the social context in which learning occurs. One of the most important tools employed in the process of learning is language (Säljö, 2001). Through dialogue learners co-construct knowledge and make sense of the world. Organisational knowledge, therefore, is continually reproduced and negotiated by actors. In this process, dialogue and the culture of the organisation shape OL processes (Cook and Yanow, 1993; Schein, 1993). Research from a sociocultural perspective focuses on how knowledge is learnt as well as what knowledge has been learnt. The need to understand learning processes within the context in which they occur has led sociocultural researchers to adopt observational studies.

For sociocultural researchers, learning does not just entail the acquisition and processing of information but involves a deepening process of participation in a community of practice (Brown and Duguid, 1991). As a newcomer moves from the periphery of this community to its core, they become more active and engaged within the culture (Lave and Wenger, 1990). Learning processes are, therefore, shaped by the institutional, cultural and historical context. Organisational actors strive to make sense of their environment and conform to the societal norms for a given situation.

Social – cognitive approaches to learning are also present in the literature which help to explain organisational learning processes by integrating fragmented studies on learning (Akgun, Lynn et al., 2003 p. 839). Under a social-cognitive framework OL can be interpreted as a social construction which transforms acquired cognition into abstract knowledge (Nicolini and Menzar, 1995). The bringing together of the cognitive (or skills acquisition and information processing) and the social (or participation) elements opens up what Elkjaer (2004) calls 'the third way' of OL which is defined as "the development of experience and knowledge by inquiry (or reflective thinking) in social worlds" (p.419).

Figure 3.1 depicts a Venn diagram with a selection of key contributions to OL. The studies are plotted within different circles according to their emphasis on the cognitive, social or behavioural nature of learning. Studies that focus on more than one aspect appear in the overlapping areas.
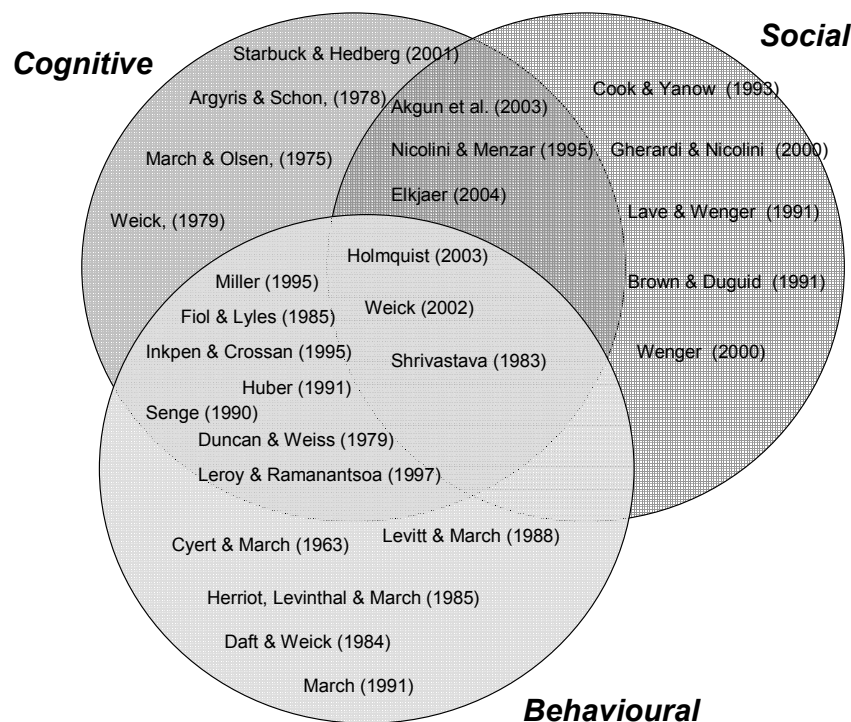
 Figure 3.1. Examples of a selection of key contributions according to the nature of learning defined in the thesis

Finally, there are authors who frame organisational learning as an integrated cognitive, social and behavioural phenomenon. For instance, Holmqvist (2003) refers to

organisational learning as the social production of organisational rules based on experience that leads to a changed organisational behaviour. This definition contains a relational element (social production), a cognitive aspect (interpretation of experience) and a behavioural dimension (changes in action). This integrative view of learning is gaining acceptance among scholars. For instance, the work of Karl Weick, a prominent theorist in organisational behaviour whose early contributions to organisational learning (1979) placed an emphasis on cognition, has evolved to integrate the social aspects of learning. Weick (2002) argues that learning "is not something people possess in their heads but rather something that people do together" (p. S8). He further claims that people's action is inextricably linked to thought and feeling and that learning occurs as people try to develop meaning and make sense of organisational life.

This study supports an idea that is gaining increasing acceptance, that learning has a complex cognitive, behavioural and social nature. Individuals in MCompany used primarily cognitive abilities to understand and contextualise the findings from research. When some of the findings were thought to have value in promoting MCompany's thought leadership, action followed in the form of writing articles, organising events, including research findings in bids, etc. All these activities happened within an intense web of social interactions that both enriched and legitimised the learning. In order to fully grasp the subtleties of the MC Centre case, and the myriad of factors that came into play to explain differences across projects, a holistic multi-nature approach (cognitive, behavioural, social) to organisational learning is adopted and a working definition employed: *"Organisational learning is the development of knowledge, through reflection and action in organisations that become the context for social interactions".*

3.2.2.2. Types of learning

Uncovering the assumptions made by authors when studying OL as to whether learning is a cognitive, behavioural or social phenomenon, helps clarify why the OL field is so heterogeneous and diverse. Besides the nature of learning, the different *types* of learning found in the literature are sources of heterogeneity. This subsection provides a brief summary of illustrative (not systematic or comprehensive) types of learning found in the literature.

Overall, the typologies known in the field emerge from distinguishing two dimensions: (1) the degree of change required for the learning to occur - in this sense, some typologies of learning distinguish between superficial and deep learning; (2) the nature of the change, differentiating whether learning is cognitive or behavioural. These two dimensions are used to organise different typologies of learning in Figure 3.2.

Degree of change required: superficial vs. deep

Argyris and Schön (1978) coined the terms '*single-loop*' and '*double-loop*' learning, defining single-loop learning as when individuals, groups or organisations modify their actions according to the difference between expected and obtained outcomes. In double-loop learning, the agents (individuals, groups or organisations) question the values, assumptions and policies that lead to actions. If these are modified, then double-loop learning has taken place.

Fiol and Lyles (1985), in their review of the relevant literature, synthesise two types of learning: *lower* and *higher* level learning. Lower level learning "may be mere repetition of past behaviours … adjustments in part of what the organisation does at routine level" (p.810). On the contrary, higher level learning refers to the adjustment of overall rules, norms and new frames of reference.

Learning has been conceptualised in the *adaptive* vs. *generative* dimension (Senge, 1990). Adaptive learning focuses on solving problems in the present without examining the appropriateness of current learning behaviours. Adaptive organisations place an emphasis on incremental improvements, often based upon the past track record of success. Essentially, these organisations do not question the fundamental assumptions underlying the existing ways of doing work. *Generative* learning emphasises continuous experimentation and feedback and ongoing examination of the very way organisations go about defining and solving problems. Senge's (1990) view is that generative learning is about creating systemic thinking, a shared vision, team learning, and a creative tension between the vision and the current reality. Generative learning, unlike adaptive learning, requires new ways of looking at the world.
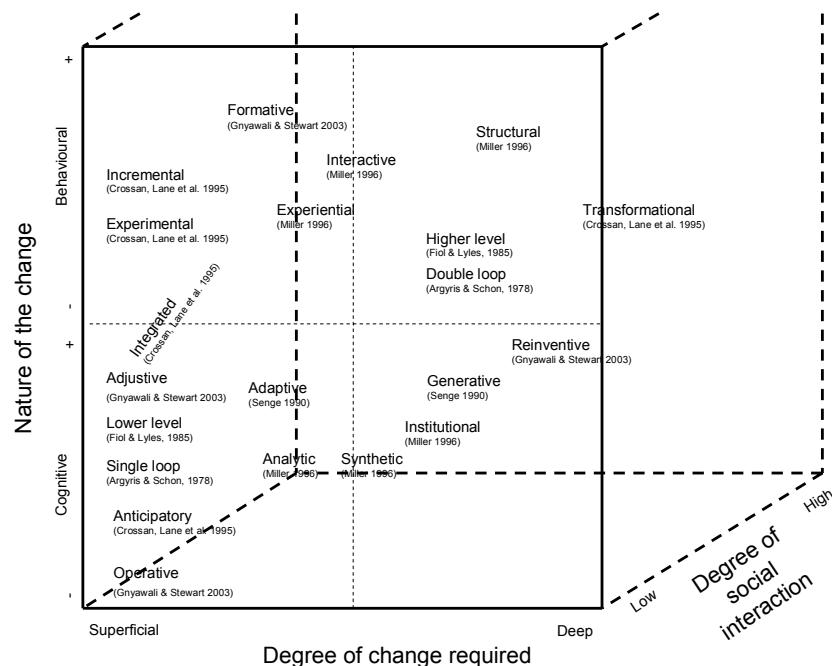
Figure 3.2. Distribution of types of knowledge. Source: compiled by author.

The degree of change required is implicitly used by Crossan, Lane et al. (1995) to distinguish between *incremental* learning, which is manifested in small changes in the pattern of behaviour, and *transformational* learning which is manifested in radical changes of behaviour (p.354). Transformational learning is called *radical* by Miner and Menzias (1996).

Nature of change required and degree of social interaction

The nature of change in learning refers primarily to whether cognitive or behavioural change (or both) is needed for learning to occur. Crossan, Lane et al. (1995) also argue

that learning involves changes in both cognition and behaviour. These changes can exist in isolation or changes in cognition may precede changes in behaviour and vice versa. When learning effects changes in both cognition and behaviour it is labelled *integrated learning*. If learning is only cognitive, it is called *anticipatory,* and if it is behavioural it is called *experimental*.

Miller (1996) distinguishes between methodical and emergent modes of thought and action and the constraints experienced by the organisational actors. Based on these two dimensions, six types of learning are defined: (1) *analytic* learning is a rational and intensive gathering of information from within and from outside the firm; (2) *synthetic* learning refers to the establishment of novel relationships and patterns; (3) *experiential* learning seeks to gather and interpret information based on actions; (4) *interactive* learning occurs implicitly in relationships with others, emphasising the social nature of learning; (5) *structural* learning occurs via organisational routines; (6) *institutional* learning refers to the process by which organisations assimilate values, ideologies and practices.

An additional typology of knowledge is based on the informational and the social/interactive dimensions of learning (Gnyawali and Stewart, 2003). Based on these dimensions, *operative* learning is primarily concerned with the validation of existing shared schemas and solving problems based on data. On the contrary, *reinventive* learning fundamentally changes current understanding by profoundly modifying existing schemas. *Formative* learning is in turn highly interactive and less informational and is related to the creation of new schemas, and the use of existing ones to provide novel interpretations to existing information. Lastly, *adjustive* learning is characterised by low interaction and high information processing, thus is best defined as the collection of new information and the use of existing shared schemas to interpret new information.

The different conceptualisations and types of organisational learning are useful lenses to explore organisational learning in the context of the MCompany–Cranfield research programme, for instance, evidence on whether MCompany changed the way it designs and configures its consultancy offerings (e.g. incremental or formative learning). The analysis of the empirical data will explore whether the consultants incorporated any of the research findings into their area of work (e.g. institutional, generative learning) and whether or not any changes in behaviour occurred.

3.2.2.3. *Levels of learning*

As previously argued, learning can occur at different levels. At the most basic level, in the individual, learning may happen after reflecting on a concrete experience (Kolb, 1984), or as a result of engaging in critical reflection, which in turn may lead to perspective transformation (Mezirow, 1991). It is beyond the scope of this thesis to cover the immense literature concerning theories of individual learning. For a sample of contributions that outline relevant learning theories see Cohen and Sproull's (1995) edited volume and Cohen's (1991) paper on the linkages between organisational and psychological research on learning. The individual is just one level or type of learner. According to Knight (2002), the construct of learning can also be applied to other 'system levels' such as group, organisation and inter-organisational networks.

This is also the approach that some of the authors mentioned above defend. For instance, Crossan, Lane et al. (1999) in their OL framework link the levels of individual, group and organisation. Furthermore, in a previous contribution (Crossan, Lane et al., 1995) they point at 'inter-organisations' as an appropriate level of analysis. This idea coincides with that of Miner and Menzias (1996) which includes populations of organisations as a level at which learning also occurs. Recent reviews in the OL field (Holmqvist, 2003) also call for the exploration of learning within and across organisations.

The MCompany–Cranfield collaboration constitutes a context where instances of individual (e.g. consultants and academics), group (project teams), organisation (Management Consultancy) and inter-organisational (MCompany–Cranfield School of Management) learning occurs. The MC Centre context and the increasing agreement among OL scholars of the multi-level character of OL, suggests adopting this approach for this thesis. Thus, OL will be explored using multiple levels of analysis. Empirical data will address actors' reflections on how the research project they were involved in has contributed to their learning, or how they have changed their views of their respective areas of work as a result of the research collaboration. At the group and organisational levels the research seeks an understanding of the learning dynamics involved across the different projects and initiatives.

3.2.2.4. *Learning processes*

One of the most useful frameworks to understand learning processes is the one proposed by Crossan, Lane et al. (1999). Briefly stated, there are four key processes that cross levels and help explain strategic renewal: intuiting, interpreting, integrating and institutionalising. These processes are outlined below.

Intuiting is the process of identifying new ways of thinking and recognising patterns (Behling and Eckel, 1991) based on prior experiences. This sub-conscious process is pre-verbal and images and metaphors are useful in interpreting and communicating insights. Intuiting and thinking is intertwined with action in a reciprocal way and is inherent in the development of language (Crossan, Lane et al., 1999). *Interpreting* refers to the explanations that one gives to one self and to others. As language emerges, and individuals think about their intuitions, they share them with others, engaging in individual and collective sensemaking (Weick, 1995a). Through the interpretation process, cognitive maps are developed within the domain in which an individual operates (Huff, 1990). Individuals' cognitive maps are shaped by their context, but they also affect what is selected and interpreted from that context. The *integration* process brings together shared understanding and co-ordinated action. Integration occurs through continuing conversation and shared practice (Brown and Duguid, 1991) and develops into mutual adjustment and negotiated action (Simons, 1991). Language serves as a repository of learning, and through dialogue becomes a powerful coordination mechanism when it facilitates participation in unfolding meaning (Isaacs, 1993). Within this process puzzling events or cues that are only partially understood may enable actors to converge on an approximate interpretation (Daft and Weick, 1984) reinforcing shared meaning. *Institutionalising* involves embedding new actions and interpretations into the routines, rules, information systems, strategy and structure of the organisation. Coherent action among individuals is formalised in plans which in turn

create contexts for interpretation (Crossan et al., 1999). Figure 3.4 shows how these processes occur in a dynamic way through different levels in what Crossan et al. (1999) call feed-forward and feedback loops.
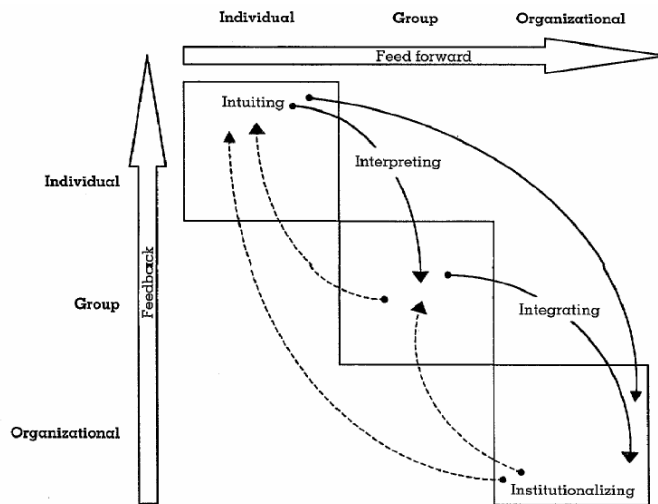
Figure 3.3. Organisational Learning as a dynamic process. Source: Crossan, Lane et al. (1999)

Zietsma, Win et al. (2002) in their longitudinal study confirmed the processes outlined by Crossan, Lane et al, (1999) and added two additional processes: attending and experimenting. These two processes place a clear emphasis on action and are characterised by a conscious decision to 'search for information' and to 'act upon cognitive interpretations' respectively. Lawrence, Mauws et al. (2005) add 'power and politics' as key processes affecting OL, adding to the increasing interest in the dimension of power and politics in OL (Antonacopoulou, 1999; Ferdinand, 2004). It is argued that different forms of power are connected to specific learning processes. For instance, discipline is linked to intuition, influence to interpretation, force to integration and domination to institutionalisation. Comprehending these different forms of power may provide a basis for understanding why some insights become institutionalised while others do not. Finally, other authors (Akgun, Lynn et al., 2003; DiBella, Nevis et al., 1996; Huber, 1991) identify processes such as knowledge acquisition and dissemination, which reinforce some of those described above but with a slightly different label.

3.3. Conclusion: the Organisational Learning approach in this thesis

Crossan, Lane et al. (1999) argue that "a good framework defines the territory and takes us a step closer to a theory" (p.523). These authors also specify that a good framework should identify: (1) the phenomenon of interest, (2) the key premises or assumptions (Bacharach, 1989), and (3) the relationships among the elements of the framework (Sutton and Staw, 1995; Weick, 1995b; Whetten, 1989). In order to define the organisational learning framework that informs this thesis, these aspects are presented below:

(1) The phenomenon of interest is the realisation of brand development, product development and management development in MCompany as a result of the research projects carried out in the MC Centre.

(2) The key premises of the framework are:

PREMISE 1: Knowledge and learning are *cognitive, behavioural* and *social* phenomena. Learning is cognitive to the extent that it is manifested in knowledge (and skills) acquisition through mental processing. In this view, knowledge can be absorbed and transferred among individuals and across organisations. Learning has a behavioural nature as it refers to changes in routines, systems, procedures and 'ways of doing' things. In addition, learning occurs through processes of social interaction and participation where learning is embedded in relationships and the social and historical context.

PREMISE 2: Organisational learning is a *multi-level* phenomenon that occurs across individuals, groups, organisations and inter-organisations. The contention that organisational learning is more than the sum of individuals is supported. It is believed that structures, systems, procedures and culture influence the way in which organisations learn and are in turn influenced by organisational learning.

(3) The relationships among the elements of this framework can be described as processes of cognition, behaviour and socialisation that occur across levels in mutually reinforcing ways. The precise processes that form these relationships are the subject of further investigation.

3.4. Questions for further review

As stated in the previous paragraph, the identification of the knowledge and learning processes that connect different levels of analysis (individual, group, and organisation) is a matter of further investigation. Learning and knowledge processes have attracted less attention in the literature compared to other aspects of OL. In addition, the enablers and barriers to learning processes have not received systematic attention. As Crossan, Lane et al. (1999) recognise:

> "There are two particular areas of research that will help advance theory. The first is understanding the mechanisms that enhance or restrict the stocks and flows of learning … What enables the organisation to "separate the wheat from the chaff" – the good from the bad – as ideas and practices develop and are refined over time?" (p.535).

The review of the OL contributions presented in this chapter supports this statement. Although Bapuji and Crossan (2004) made a subsequent effort to address this opportunity for further research, they focus on 'organisational learning facilitators' leaving 'barriers to learning' largely unexplored. Besides, their facilitators are located at a relatively abstract, macro level such as culture, strategy, structure, environment, organisational stage and resource position (pp.406-408).

Few references explicitly address the facilitators or impediments to organisational leaning processes. The theoretical OL models are useful in mapping learning processes

but are distant from practical application as the enablers and barriers of the processes are largely unknown.

In order to explore in-depth knowledge and learning processes and their respective enablers and barriers, a systematic review is conducted, which is reported in the next chapter. This systematic review aims to address the following two key questions:

- What are the key knowledge and learning processes within and across organisations?
- What are the enablers and barriers to these knowledge and learning processes?

4. SYSTEMATIC REVIEW: ENABLERS AND BARRIERS TO KNOWLEDGE PROCESSES WITHIN AND ACROSS ORGANISATIONS

4.1. Introduction

In chapter 1, the rationale for this thesis was presented. It argued that academic management research is under utilised by business. The disconnection between academic research and practice is a phenomenon shared by many physical and social science disciplines. In medicine, during the early 1990s, it was acknowledged that the findings of medical research rarely translated into actual clinical practice (Antman, Lau et al., 1992; Smith, 1991). In addition, practice based on poor-quality evaluations of the research evidence sometimes led to inappropriate recommendations (Cook, Greengold et al., 1997). Evidence-based practice in the medical field was developed emphasising the integration of the best evidence available with professional judgement and expertise to improve intervention.

With the aim of making available the best evidence, systematic review was developed to locate, critically appraise and synthesise research and findings in a transparent and reproducible manner (Mulrow, 1994). The output of a systematic review is a comprehensive and accurate picture of a body of knowledge which may be used to guide interventions in practice as well as further research. Systematic review has been used primarily in health care, but more latterly in other domains such as social care, criminal justice and education (Nutley, Davies et al., 2000). In the management field, Tranfield, Denyer et al. (2003) have developed an evidence-informed approach to management knowledge using systematic review. This model of systematic review emphasises the transparency of the review process, and an audit trail of the decisions, procedures and conclusions made by the reviewer. This helps to minimise reviewers' potential bias and lack of critical assessment, both of which have characterised traditional narrative reviews in the management field (Fink, 1998; Hart, 1998).

This chapter presents an exemplar of the application of Tranfield, Denyer et al.'s (2003) systematic review methodology. The guiding principles of this systematic review are: (1) the development of clear and precise aims and objectives; (2) the specification of a review team with clear roles and responsibilities; (3) a comprehensive search of all potentially relevant articles; (4) the use of explicit, reproducible criteria in the selection of articles for review; (5) an appraisal of the quality of the research and the strength of the findings; (6) a synthesis of individual studies using an explicit analytic framework, and (7) tabulation, transparency and comprehensiveness in the presentation and reporting of the results.

This chapter is structured as follows: first the aims and objectives of the review are stated; second, details of the methodology are outlined, focusing on the search strategy and how the studies were selected, specifying the criteria that the papers had to meet in order to be part of the final set of studies to undergo synthesis; third, the results of the systematic review are reported in two different sections, a descriptive and a thematic analysis of the literature. The descriptive analysis of the literature provides an account of how the field of organisational knowledge is structured. The thematic synthesis contains details of knowledge processes within and across organisations, and the enablers and barriers of these knowledge processes. The chapter concludes with an identification of gaps in the literature and the propositions that the empirical part of this thesis will address.

4.2. Aims and objectives

4.2.1. Scoping study

When stating the purpose of the thesis in chapter 1 (section 1.1), it was explained that in order to explore the case of the MCCentre, early readings focused on the literature of knowledge utilisation (Dunn, Dukes et al., 1984; Huberman, 1987; Larsen, 1980; Rich, 1991; Weiss, 1980). Literature on evidence-based practice was also reviewed, gaining insights into research utilisation in the medical field (Muir Gray, 1997; Sackett, Rosenberg et al., 1996), criminal justice (Ferguson, 2002), social care (NCDDR, 1996; Walter, Nutley et al., 2004), education (Hemsley-Brown, 2004), and the overall impact of research in policy making (Davies, Nutley et al., 1999; Walter, Nutley et al., 2003).

This initial work developed into a scoping study that preceded this systematic review. The key tentative findings of the scoping study were threefold. First, a clarification of the meaning of 'knowledge utilisation'. Instrumental and conceptual modes of research utilisation provide a useful way of thinking about utilisation (Caplan, 1975; Weiss, 1979). Beyer and Trice (1982) added the symbolic dimension of research utilisation. Second, that there is not a consolidated theory of knowledge utilisation (Wingens, 1990). The explanations for use and non-use of research are normally elaborated based on communication-related theories, the actions of rational actors and the product of bureaucratic politics (Rich, 1991, p.323). Third, that the factors that affect knowledge utilisation can be grouped into four main categories (NCDDR, 1996): (1) the *content of knowledge:* findings of research, its implications and ideas; (2) the *source of knowledge:* management researchers, academic institutions and research bodies, (3) the *users* of knowledge: organisations or individuals who receive and use research to achieve specific objectives – of particular importance are boundary-spanning individuals (Tushman, 1977); (4) the *practices of transmission*: dissemination activities that either directly (e.g. consultation, training and development) or indirectly (e.g. publication) communicate research findings to wider audiences.

The findings from the scoping study, and particularly the categories to group the factors that affect knowledge utilisation, informed the purpose of the systematic review.

4.2.2. Purpose of the review

The purpose of the review is grounded in the findings from the scoping study and the conclusion of the Organisational Learning (OL) review (chapter 3) in which it was acknowledged that learning and knowledge processes and the enablers and barriers to these have not yet received systematic attention. Chapter 3 focused on OL while this chapter focuses on organisational knowledge.

The purpose of the systematic review is to address these gaps, and in so doing to locate, critically appraise and synthesise relevant research in the management and organisational fields in order to gain a deep understanding of knowledge processes within and across organisations.

Specifically, the review will:

- Identify key knowledge processes within and across organisations and their associated routines.
- Identify the enablers and barriers to knowledge processes focusing on the content, source, user and process of transmission of knowledge.

4.3. Methodology: how the review was conducted

This section contains the methods and tools used to conduct the systematic review, providing details of the procedures employed to locate, critically appraise, and synthesise the evidence. The review panel, search strategy, selection criteria, quality assessment and approach to synthesis are also described. All these aspects are reported in detail in order to enhance the transparency of the review facilitating an audit trial of the methods employed and the conclusions reached.

4.3.1. Review panel

The review panel consisted of the reviewer and author of this thesis, his supervisor and a senior academic and lead supervisor. In addition, other academics with whom the researcher has had contact and are knowledgeable in the field were consulted to discuss the approach and findings of the present review. Their advice and suggestions were incorporated when appropriate into the systematic review. Names are concealed to ensure anonymity.

Person	Role / Title and organisation
Javier Marcos	Reviewer. PhD student, Cranfield School of Management.
Dr. A	Supervisor. Senior Research Fellow, Cranfield School of Management.
Prof. B	Senior supervisor, Cranfield School of Management.
Prof. C	Chair of the PhD progress review meetings.
Dr. D	Member of the PhD progress review meetings.
Dr. E	Member of the PhD progress review meetings.
Dr. F	External advisor. Research Unit for Research Utilisation, University of St. Andrews. Expert in evidence-based policy and practice in various areas.
Dr. G	External advisor. School of Management, University of Surrey. Expert in evidence-based policy and practice in education.

Table 4.1. Review panel. Source: compiled by author.

4.3.2. Search strategy

4.3.2.1. Sources of information

Various sources including citation databases, references cited in papers, bibliographies, specific journals, and doctoral theses were searched. The aim of the searches was to locate all potentially relevant studies, maximising coverage and minimising bias. In addition manual searches were conducted to locate relevant conference papers, theses, working papers and reports. Table 4.2 provides details of the sources of information employed in the review.

Type of source	Details
Citation databases	Proquest EBSCO Web of Science Science Direct Emerald Psyclit ERIC An assessment of all the other management databases available at Cranfield was conducted to ensure a wide coverage of quality published material.
References	References suggested by the review panel and/or knowledgeable researchers and/or practitioners. Cross references: list of references from selected papers
Available bibliographies	A focused search to browse for bibliographies about the adoption of research utilisation was done and relevant bibliographies retrieved such as: http://kuuc.chair.ulaval.ca/english/master.php?url=bibliographie.php
Manual searches of specific journals	Governance of knowledge Journal of knowledge management Knowledge-Creation Diffusion Utilisation Science Communication (formerly Knowledge-Creation Diffusion Utilisation) Knowledge and policy Knowledge and process management Knowledge in society Knowledge management: research and practice Journal of Information Processing and Management Knowledge acquisition (Science Direct)
Thesis	Index to thesis

Table 4.2. Sources of information. Source: compiled by author.

4.3.2.2. Information and data handling

The searches were fully documented, inputting the details of the searches (database collections, search strings, number of documents retrieved and number of documents initially selected) into two by two matrixes in spreadsheets using Microsoft Excel. Each database had its own matrix showing the results of the searches. All searches were saved with a reference number to enable further tracking. Procite 5.0 was used to store citation and other descriptive information. This data was then exported into Microsoft Excel to be filtered and to enable the creation of graphics and other information contained in the descriptive analysis.

4.3.2.3. Search terms

The following search terms were used to locate relevant studies and papers (the asterisk denotes a wild card that was used to retrieve both American and British spelling):

Search Terms				
Management Knowledge	Management Ideas	Management Fads	Management Knowledge	Management Ideas
Relevance gap	Adoption of ideas	Adoption of innovation	Relevance gap	Adoption of ideas
Techniques	Information		Techniques	Information
Knowledge adoption	Knowledge utili*ation	Knowledge transfer	Knowledge adoption	Knowledge utili*ation
Knowledge structures	Knowledge use	Knowledge acquisition	Knowledge structures	Knowledge use
Knowledge integration	Sensemaking knowledge	Knowledge worker	Knowledge integration	Sensemaking knowledge
Knowledge into action	Knowledge use	Knowledge into practice	Knowledge into action	Knowledge use
Knowledge consumption	Knowledge-based change	Knowledge creation	Knowledge consumption	Knowledge-based change
Knowledge dissemination	Knowledge diffusion	Knowledge assimilation	Knowledge dissemination	Knowledge diffusion
Knowledge absorption	Knowing	Knowing-doing gap	Knowledge absorption	Knowing
Knowledge impact	Knowledge application	Absorptive Capacity	knowledge impact	knowledge application
Research utili*ation	Research into practice	Research impact	Research utili*ation	Research into practice
Collaborative research	Research outcome?	Research implementation	Collaborative research	Research outcome?
Research translation	Research influence	Research and practice	Research translation	Research influence
Research application	Action research	Research-led practice	Research application	Action research
Research transfer	Research communication	Research assimilation	Research transfer	Research communication
Linking research	Research contribution	Research adoption	Linking research	Research contribution

Table 4.3. Search terms for the systematic review.

These search terms were combined into search strings in the different databases to be combined as appropriate. See Appendix A1 for details of the search strings.

4.3.3. Selection criteria

The selection of the studies consisted of scoping, relevance and quality criteria. The scope of the review was defined in terms of focus, time frame, language and discipline. The selection of relevance was based on title, abstract and, where appropriate, full text. Finally, quality assessment took into account several aspects of the quality of research. These criteria are specified as follows.

4.3.3.1. Scope of the review

The overall scope of the review is organisational and management knowledge. This includes ideas, practices and technological knowledge. Special emphasis is placed on management research. However, the scoping study revealed that management research impact is an under explored field compared with studies of research impact in health and social care or education, and the knowledge management and organisational literatures have much to offer to aid our understanding of processes related to knowledge in organisations, though not specifically research-based knowledge.

Element	Details
FOCUS	The focus of the review is on the enablers and barriers for knowledge processes within and across organisations.
TIME FRAME	Time frame: searches were conducted from 1990 onwards. Walter and Nutley (2002) recognise that results form searches prior to that date will be limited. The reviewer found this decision reasonable. Only 15% of the 780 references that formed the scoping study were pre-1990 studies.
LANGUAGE	Only English
DISCIPLINE	The review examines the management, organisational and business literature. This criterion is flexible to include relevant studies that could belong to other related disciplines, such as Psychology, Sociology and Economics.

Table 4.4. Scope of the review. Source: compiled by author.

4.3.3.2. Selection by relevance

The selection of documents comprised a 2-stage process. In stage 1, selection is made by title and abstract. Papers are considered relevant if they address general aspects of knowledge, such as creation, transfer or utilisation of knowledge within and between organisations.

In stage 2, papers that are relevant based on title and abstract undergo an evaluation of full text, and will be included if they provide relevant accounts of key issues, frameworks and theoretical underpinnings, or empirical evidence to gain a deeper understanding of knowledge processes within and across organisations. Papers addressing elements and variables that facilitate and hinder knowledge processes within and across organisations will be included. Papers can fall under any of the following categories:

- Conceptual sources: papers to be included are those that provide a summary of key issues, frameworks and theoretical underpinnings of the adoption and utilisation of research.

- Empirical contributions: papers focusing on the factors that facilitate or hinder the knowledge processes will be considered. It will also take into account empirical papers that address outcomes, impact or effectiveness of interventions aiming to encourage the exploitation and use of knowledge in organisations. Studies will be selected if they provide evidence of effectiveness of interventions, specifically if they contain qualitative or quantitative data from real interventions aimed at evaluating how knowledge and research is adopted/utilised by individuals in organisations and a discussion of how those interventions did/did not enhance the uptake of knowledge.

4.3.3.3. Quality assessment criteria

After the selection of papers based on relevance, a quality assessment for each paper is undertaken. A paper is excluded from the review if it failed to meet a minimum standard in one of the criteria shown in Table 4.5:

Quality assessment criteria	Explanation
Clarity of purpose	Are the purpose and aims of the study clearly specified?
Theoretical/conceptual robustness	Is the study well informed by existing theory? Does it provide a compelling argument to justify its main conclusions and claims? Is it properly referenced?
Study design and methods of data collection	Is the study design appropriate to the stated purpose? Is the sample well justified? Is the response rate adequate?
Data analysis	Are the methods of data analysis appropriate? Are they adequately described?
Conclusions	Are the conclusions well linked to the purpose? Are they significant conclusions?
Relevance for practice	Would a practising manager find the study useful?
Overall quality score	Overall, how good is this study?

Table 4.5. Quality assessment criteria. Source: compiled by author.

4.3.4. Strategy for synthesising the literature

4.3.4.1. Contents of the descriptive analysis

A descriptive analysis of the literature is a detailed examination and reporting of a field of study. Tranfield, Denyer et al. (2003) argue that the reviewer should produce descriptive analysis tables to highlight various aspects of the included studies. The descriptive analysis may help drawing conclusions about how the field is organised and provide a general picture of an area of inquiry.

Table 4.6 gives details of the fields extracted from the literature, some of which are further discussed. The tabulated data can be found in Appendix A2.

ASPECTS	FIELDS
Citation information	Author, year, title of paper (book), journal title, publisher, volume, issue, page numbers, URL (if web pages).
Knowledge processes	What knowledge processes are mentioned or examined in the study?
Type of engagement in knowledge	Refers to intra- or inter-organisational
Purpose	A brief description of the aim and objectives of the study
Key findings	Brief summary of the main conclusions reached and research gaps identified
Theoretical framework	What types of established theories underpin the argument (e.g. resource-based view, institutional theory, agency theory)
Type of study	Is it a theoretical paper? If it is empirical, are the methods of data collection quantitative or qualitative?
Type of organisation	In what type of organisation has the study been conducted? Private or public?
Country	If the paper is theoretical, which country is the author affiliated in? If it is empirical, in which countries have the data been collected?
Sector	What industries do the participating firms belong to?
Methods of data collection and analysis	What are the primary methods of data collection and analysis?
Sample	What is the sample size? (if appropriate)
Enablers/barriers: source, content, user, process and others)	This field captures briefly the barriers and enablers of knowledge processes classified in the four aspects derived from the scoping study: source, content, user, process

Table 4.6. Fields included in the descriptive analysis. Source: compiled by author.

4.3.4.2. Approach to thematic analysis

After extracting the data for the descriptive analysis, the studies are analysed in depth. Thematic analysis is the process of 'breaking down' studies into their component parts. Synthesis is the process of putting together the parts from multiple studies into a new or different arrangement (Denyer and Tranfield, 2006). Synthesising qualitative studies comprises a key challenge for researchers, although it is possible to synthesise qualitative and quantitative data with theoretical contributions (Dixon-Woods, Agarwal et al., 2004). In order to operationalise the synthesis, some principles for synthesising the evidence are adopted. Table 4.7 outlines these principles extracted from conceptual synthesis (Nutley, Davies et al., 2002; Nutley, Davies et al., 2003), narrative synthesis (Hammersley, 2001), and meta-ethnography (Campbell, Pound et al., 2003; Noblit and Hare, 1988).

From each study the relevant passages and data are extracted. Emerging themes are identified and grouped into dimensions following an inductive analysis approach (Patton, 2002) but aided by the relevant categories identified in the scoping study (source, user, content, process). Table 4.7 summarises the principles for the synthesis of the literature adopted in this review.

Principles	Synthesis Strategy: Approach and methods
Synthesis method appropriate to the aims of the study	To explore and map the key issues, frameworks and theoretical underpinnings of knowledge processes, a narrative synthesis will be used. To identify the enablers and barriers of knowledge processes a narrative synthesis of tabulated data from the descriptive analysis will be used.
Cope with diffuse and heterogeneous data	Descriptive data from individual studies will be extracted, tabulated, and presented in informative ways.
Go beyond narrative description	The descriptive analysis provides a complement to the thematic analysis. Grouping of processes, enablers and barriers, aim to go beyond a mere narrative description.
Provide enough detail from the original studies to allow the reader to interpret the results	For each document included, the purpose and the key findings are reported. This will allow the reader to interpret and validate the conclusions at which the reviewer arrives.
Give audit trial of key findings and conclusions	Studies included in the review are fully reported. Comprehensive descriptive analysis tables are provided.

Table 4.7. Principles for synthesising literature. Source: compiled by author.

4.4. Descriptive analysis

4.4.1. Results of the review

The searches of citation databases using combinations of the keywords detailed in Table 4.3 retrieved 1,581,824 references, out of which 2,380 were deemed relevant based on the title. This list of articles was refined to discard duplicate references, particularly those references previously held from the scoping study. The refined list included 2,069 sources. This was further refined to filter relevant studies, and after applying the relevance criteria, 740 studies were considered to be potentially relevant based on title and abstract. A further refinement was conducted examining the keywords, the focus of the journal and the nature of the study to narrow down the list to a more manageable number. The purpose of each source study was evaluated to ascertain whether it was relevant for the review. After various iterations, 133 studies were shortlisted. After an in-depth analysis of these sources, 26 were rejected due to insufficient quality. The resultant 107 studies were included for review. The descriptive analysis is based on these 107 references. The thematic synthesis is also based on the 107 studies plus some relevant citations from the scoping study.

Systematic review results	Number of references
Databases searched	6
Key words used	85
Searches conducted	103
References retrieved	1,581,824
References filtered	2,380
After discarding duplicates	2,069
After applying selection criteria	740
Shortlisted	133
Final list (discarding poor quality studies)	107

Table 4.8. Number of references retrieved and shortlisted. Source: compiled by author.

The 107 studies were grouped as follows: 40 studies were classified as purely theoretical, 36 as purely quantitative, 23 as qualitative and 8 were studies that used mixed methods (Table 4.9).

Type of study	Number of references
Theoretical	40
Quantitative	36
Qualitative	23
Mixed methods (qualitative and quantitative)	8
TOTAL	107

Table 4.9. Types of studies included in the review. Source: compiled by author.

This classification of studies was particularly useful in carrying out analysis of authorship and to extract data regarding aspects such as methods of data collection and sample sizes. Table 4.10 contains the distribution of all the studies included.

Type of study	Citations
Theoretical	(Agrawal, 2001; Amesse and Cohendet, 2001; Argote and Ingram, 2000; Argote, McEvily et al., 2003; Bapuji, Crossan et al., 2005; Beyer and Trice, 1982; Bhatt, 2000; Boisot, 2002; Carlsson, 2003; Ciborra and Andreu, 2001; Cook and Brown, 1999; Dodgson, 1993; Eisenhardt and Santos, 2002; Goh, 2002; Grant, 1996b; Inkpen and Tsang, 2005; Ipe, 2003; Johnston and Blumentritt, 1998; Kogut and Zander, 1992; Kostova, 1999; Latham and Latham, 2003; Leseure, Bauer et al., 2004; Major and Cordey-Hayes, 2000; Martin and Salomon, 2003; Nonaka, 1994; O'Dell and Grayson, 1998; Ordoñez de Pablos, 2004; Osterloh and Frey, 2000; Rich, 1991; Rogers, 1995; Rynes, Bartunek et al., 2001; Shariq, 1999; Spender, 1996a; Tsoukas, 1996; Van den Bosch, van Wijk et al., 2003; Van den Bosch, Volberda et al., 1999; Von Hippel, 1994; Von Krogh, 1998; Zahra and George, 2002; Zeitz, Mittal et al., 1999)
Quantitative	(Birkinshaw, Monteiro et al., 2004; Bjorkman, Barner-Rasmussen et al., 2004; Caloghirou, Kastelli et al., 2004; Chen, 2004; Chua, 2002; Cohen and Levinthal, 1990; Cummings and Teng, 2003; Darr, Argote et al., 1995; Dhanaraj, Lyles et al., 2004; Eriksson and Chetty, 2003; Gopalakrishnan and Santoro, 2004; Gupta and Govindarajan, 2000; Kogut and Zander, 2003; Kotabe, Martin et al., 2003; Lane and Lubatkin, 1998; Lane, Salk et al., 2001; Lenox and King, 2004; Levin and Cross, 2004; Liao, Welsch et al., 2003; Liebeskind, Oliver et al., 1996; Lofstrom, 2000; Matusik and Heeley, 2005; Minbaeva, Pedersen et al., 2003; Minbaeva and Michailova, 2004; Nieto and Quevedo, 2005; Pak and Park, 2004; Reagans and McEvily, 2003; Simonin, 2004; Sung and Gibson, 2005; Szulanski, 1996; Szulanski, 2000; Szulanski, Cappetta et al., 2004; Tsai, 2001; Tushman, 1977; Twomey, Twomey et al., 2000; Zander and Kogut, 1995)
Qualitative	(Beech, MacIntosh et al., 2002; Carlile, 2004; Carlile and Rebentisch, 2003; Easterby-Smith, Graca et al., 2004; Feller, 2002; Gherardi and Nicolini, 2000; Gilbert and Cordey-Hayes, 1996; Hislop, 2003; Huang and Newell, 2003; Inkpen and Dinur, 1998; Jacob and Ebrahimpur, 2001; Jensen, Szulanski et al., 2003; Kalling, 2003; Kim, 1998; Lam, 1997; Lim, 2000; Matsuo and Easterby-Smith, 2003; Sheen, 1992; Sparkes and Miyake, 2000; Szulanski and Jensen, 2004; Tranfield, Bessant et al., 2003; Tsang, 1999; Wagner, 2003)
Mixed methods	(Boland Jr., Singh et al., 2001; Cockburn and Henderson, 1998; Darr and Kurtzberg, 2000; Hansen, 1999; Hansen, 2002; Lin, Tan et al., 2002; Soo, Devinney et al., 2002; Watts Sussman and Schneier Siegal, 2003)

Table 4.10. Classification of citations included in the review. Source: compiled by author.

In the next subsections, the findings from the systematic review are reported. The first subsection provides details of the descriptive analysis of the literature by means of a narrative summary, conclusions of knowledge processes and the enablers and barriers of knowledge processes in the firm.

4.4.2. Chronological distribution of studies

The scope of the review set the time frame from 1990 to the present. As discussed in the scope of the review in section 4.3.3, this date is justified in that results from searches prior to 1990 may be limited given the nature of the field (Walter and Nutley 2002). The reviewer found this decision reasonable. Only 15% of the 780 references that formed the scoping study were pre-1990 studies. Furthermore, it was believed that cross-referencing papers accepted for review ensured good coverage of the literature.

This method identified two pre-1990 seminal papers (Beyer and Trice, 1982; Tushman, 1977) that were included. Figure 4.1 shows the distribution of studies across time. Noticeably, 60% of the papers have been produced over the last five years, whilst the other 40% were written prior to that date. This chronological distribution shows the growing interest in the topic of organisational knowledge within management studies over the last few years.
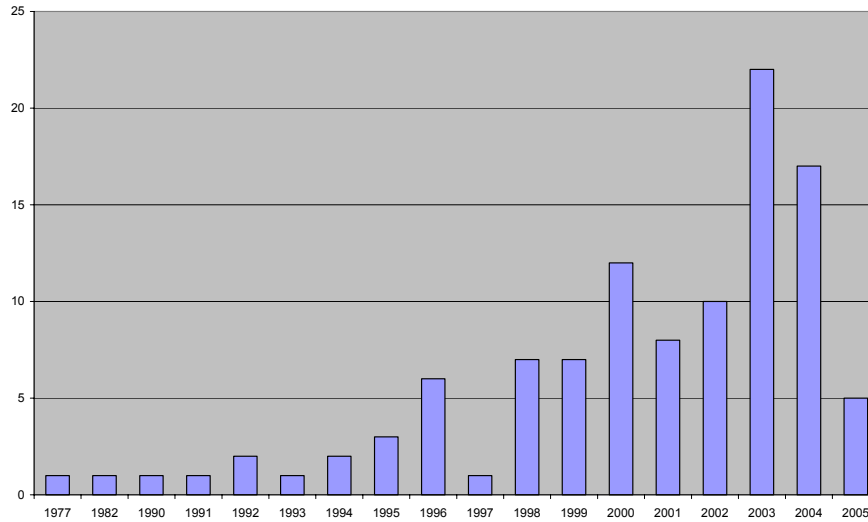
Figure 4.1. Chronological distribution of studies. Source: compiled by author.

4.4.3. Geographical distribution of studies and authors

The geographical distribution of the papers is divided into three groups: the first group comprises theoretical papers (Table 4.11), the second group empirical papers that used quantitative methods (Table 4.12) and the third group empirical papers that used qualitative methods or mixed qualititative-quantitative methods (Table 4.13).

4.4.3.1. Geographical distributions of theoretical papers

Most contributions have been written by scholars affiliated to institutions located in Anglo-Saxon countries, followed by authors from 12 different European (non-UK) countries. The rest of papers are from countries in smaller numbers (Table 4.11).

Country	Theoretical papers	Country	Theoretical papers
USA	20	Sweden	2
Canada	5	Australia	1
UK	4	France	1
Spain	3	Cyprus	1
Netherlands	2	Japan	1
Switzerland	2	Finland	1

Table 4.11. Geographical distribution of theoretical contributions. Source: compiled by author.

This dominance of western countries is worthy of comment. As Nonaka (1994) and Tsoukas (1996) point out, most of the literature on knowledge management and organisational learning is influenced by western epistemology of knowledge. It would be beyond the scope of this review to delve into the characteristics and implications of western versus oriental conceptions of knowledge. However, a balanced approach has

been taken here that considers knowledge both as an asset and as a process, reconciling to some extent western and oriental views of knowledge.

4.4.3.2. Geographical distribution of empirical quantitative papers

At first glance, an analysis of the countries where studies were conducted using a quantitative approach shows a predominance of contributions from the US. This finding is not surprising "given the clear predominance of quantitative methods and statistics courses over qualitative ones, particularly in North America" (Rynes and Gephart, 2004 p.454). The total number of papers that use data gathered from US firms is almost equal to the sum of the rest of the countries put together. This means that conclusions gathered from quantitative papers will have a strong US bias and the findings may not reflect knowledge processes, enablers and barriers in non-US contexts.

Country	Quantitative methods	Country	Quantitative methods
USA	22	China	1
Sweden	4	Finland	1
Denmark	3	France	1
UK	3	Germany	1
Europe (various countries)	2	Greece	1
Hungary	2	Italy	1
Japan	2	Netherlands	1
Canada	1	Russia	1
Singapore	1	South Korea	1

Table 4.12. Geographical distribution of quantitative contributions. Source: compiled by author.

4.4.3.3. Geographical distribution of empirical qualitative and mixed methods papers

Consistent with the geographical distribution of theoretical and quantitative papers, similar trends can be observed in the case of qualitative and mixed methods contributions (those that use both qualitative and quantitative approaches to collect and analyse data). First, in terms of the amount of papers written, the majority of papers originate in the US, but only 11 studies used qualitative methods, compared to 22 that were purely quantitative. Second, papers published by Anglo-Saxon authors account for more than 70% of the total. Third, nearly 45% of papers are written by European authors where qualitative research is more prevalent.

Country	Qualitative and mixed methods	Country	Qualitative and mixed methods
USA	11	France	1
UK	10	Brazil	1
Sweden	3	Europe (various European countries)	1
Japan	4	Italy	1
China	2	South Korea	1
Mexico	1		

Table 4.13. Geographical distribution of qualitative and mixed methods contributions. Source: compiled by author.

4.4.4. Distribution by journals

Table 4.14 contains a selection of the journals in which most of the articles included in the review were published. The 107 contributions selected for review come from a total of 42 different journals, four books and book chapters, four working or conference papers and one thesis. One noticeable aspect of this list is that the number of journals included in the review that are focused on knowledge issues (such as the Journal of

Knowledge Management or Knowledge and Process Management) is significantly lower than the number of papers published in high-quality general management journals (such as Organisation Science, Strategic Management Journal, Journal of International Business Studies, Administrative Science Quarterly, the Academy of Management Journal and Academy of Management Review). This is the result of applying quality criteria systematically, which may have left out some relevant but not so robust contributions. The distribution of journals also evidences how 'knowledge' has become a central and recurring theme in mainstream organisational research and management studies.

Journal	Number of sources	Journal	Number of sources
Organization Science	13	Organization Studies	3
Strategic Management Journal	8	International Business Review	3
Journal of International Business Studies	6	Technovation	3
Administrative Science Quarterly	5	Journal of Intellectual Capital	2
Journal of Knowledge Management	5	Knowledge and Process Management	2
Management Science	5	Journal of Knowledge Management	1
Academy of Management Journal	3	Management Learning	1
Academy of Management Review	3	Knowledge Creation Diffusion Utilisation	1
Organizational Behavior and Human Decision Processes	3	Science Communication	1

Table 4.14. Key journals of references in the review. Source: compiled by author.

4.4.5. Distribution of studies by sector

In the "knowledge economy" (Powell and Snellman, 2004) the production of goods and the delivery of services have become 'knowledge-intensive activities'. Knowledge has been recognised as playing a critical role in the activities of manufacturing firms as well as in traditional knowledge-intensive firms (such as information and communications technology, biotechnology, medical & pharmaceutical, and professional services). This raises an interesting question about the extent to which this distribution of studies enables any sort of cross-sector comparison.

Figure 4.2 features a graphical representation of the distribution of sectors. The column 'various' refers to studies conducted in a wide range of industries, not in any specific one.
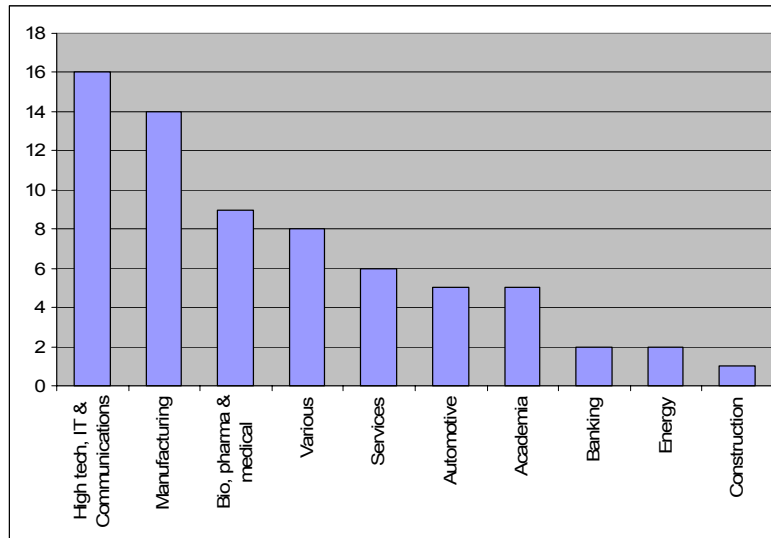
Figure 4.2. Distribution of studies by sector. Source: compiled by author.

4.4.6. Methodological approaches, methods and operationalisation

According to their epistemological foundations, the studies in the review can be broadly classified into two groups: those that follow a positivist approach and those grounded in a constructivist epistemology. The first group employs primarily surveys and statistical methods to analyse the data. The second group of studies uses qualitative methods, predominantly case studies.

Approach	Number of studies	Approach	Number of studies
Survey	38	Grounded approach	2
Case Study	18	Critical incident	1
Quantitative analysis	5	Experiment	1

Table 4.15. Methodological approaches. Source: compiled by author.

Overall, it seems clear that quantitative approaches to the study of knowledge pervade, probably due to the influence of the US academic approach in this field. However, how knowledge and learning is studied in organisations varies a lot from study to study. Most of the studies are grounded in a positivistic view of science. This finding supports Bapuji, Crossan et al.'s (2005) claim that "nearly all the studies that we examined fell in the positivist paradigm of research and the absence of Organisational Learning research that follows other traditions is noteworthy (p.546)".

The analysis of emerging themes also reveals that the majority of research studies in this field treat knowledge and learning as discrete variables, i.e. having specific values (often measured quantitatively). Arguably, knowledge and learning are processes that develop over time, and only by following their development over protracted time frames will studies provide deeper insights. Only three studies included in this review (Hislop, 2003; Szulanski and Jensen, 2004; Van den Bosch, Volberda et al., 1999) follow longitudinal approaches to exploring knowledge processes in depth.

As mentioned in the paragraph above, methods of data collection vary significantly in empirical studies. Questionnaires were the most common method (used in 39 studies), followed by interviews (used in 19 studies), observation techniques (employed in seven papers), archival data (found in seven studies), social network analysis (SNA) (four studies), analysis of documents such as company reports (two studies), bibliographic data (two studies), and expert panels, diaries, critical incident techniques and business data each used once.
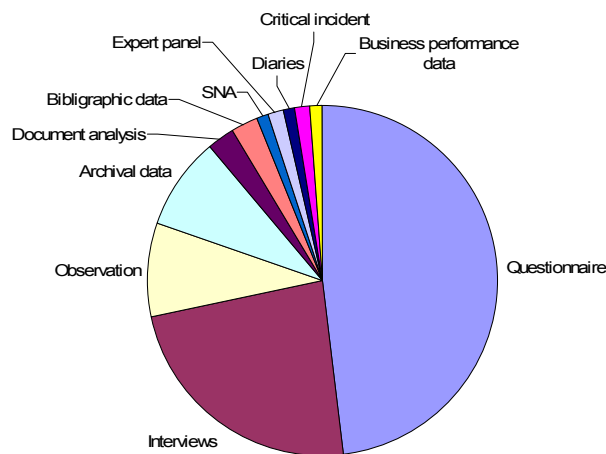
Figure 4.3. Distribution of methods of data collection and analysis.

As can be seen in Figure 4.3 the use of quantitative methods dominates, which is predictable given the positivistic nature of most studies. Research conducted using qualitative approaches could contribute to enriching our existing understanding of knowledge processes within and across organisations. This suggests it is worthwhile considering methods that capture the "multiple interpretations and insights about organisational learning" (Bapuji, Crossan et al., 2005 p.541) that most quantitative methods cannot capture. Another interesting finding is that only a few studies (eight papers) combine quantitative and qualitative methods. In empirical studies, from the methodology statement, it is concluded that approximately, a dozen papers used two different methods of data collection, six studies used three methods, one study employed four different methods, and lastly there is a study that uses five different methods to collect data. This suggests that studies that use triangulation of methods could contribute new insights to the study of knowledge and learning in organisations.

Table 4.16 shows a few examples of how different studies have conceptualised knowledge and learning in organisations. It becomes clear that a large variation exists in the ways in which knowledge and learning have been operationalised. The analysis of the operationalisation of knowledge and learning suggests a number of considerations. First, quantitative research, however useful in providing an understanding of knowledge and learning, often focuses on objective measures (e.g. R&D expenditure, count of co-authored papers, units produced) that overlook other subtle mechanisms by which knowledge is created, disseminated and used. Second, a number of studies rely heavily on capturing knowledge processes by asking respondents

to answer a set of questions. This over-reliance on respondents' perceptions, may leave uncovered sensitive or political aspects that affect how individuals integrate and use knowledge in organisations (Lawrence, Mauws et al., 2005). Furthermore, organisational events that impact knowledge processes may not be noticed by individuals, and thus not reported. These events could be captured by methods such as focused observation. A combination of self-reported data, and intervention of the researcher, is deemed to provide new insights. For instance, closeness with the research setting may allow the researcher to gain a better understanding of subtle complex aspects of organisational learning and knowledge such as how knowledge is accessed, translated, adopted, used and integrated into routines. Table 4.16 contains examples of how knowledge and learning is operationalised in the studies.

Concept	Elements, operationalisation and measurement	Citation
Absorptive capacity (AC)	Research and Development (R&D) intensity is measured as the percentage of R&D expenditure per business unit sale).	(Cohen and Levinthal, 1990; Lim, 2000; Tsai, 2001)
	Adoption of a practice is measured as the total count of pollution-reducing products or process modifications in a given year as indicated in the Source Reduction Activity fields of the Toxic Release Inventory.	(Lenox and King, 2004)
	AC was measured through "understanding of new knowledge" looking at publication records.	(Lane and Lubatkin, 1998)
	Knowledge adoption is measured by asking informants to select actual e-mail messages they received that contain advice, recommendations, and suggestions about how to solve problems.	(Watts Sussman and Schneier Siegal, 2003)
	Stickiness (difficulty in replicating practices) is observed by asking respondents to answer questions related to typical events expected at a particular stage of the transfer.	(Szulanski, 2000)
	Absorptive capacity is operationalised by the extent of collaborations with industry, measured by co-authored scientific publications.	(Cockburn and Henderson, 1998)
	Knowledge acquisition is measured as new ideas, new insights and new ways of doing things generated from a problem-solving situation.	(Soo, Devinney et al., 2002)
Knowledge transfer	Effectiveness of implementation was measured by quality assessment programmes and recipient unit's performance.	(Jensen, Szulanski et al., 2003)
	Innovation, which reflects knowledge acquisition and internal distribution, is measured by number of products launched in a given year divided by number of target products to be launched.	(Tsai, 2001)
	Knowledge transfer performance is measured by scales where respondents reflect the degree to which the firm acquires the targeted knowledge and the degree to which the acquired knowledge contributes to the firms' technology development, new product development, human resource quality, and production efficiency.	(Chen, 2004)
Organisational learning	Knowledge acquisition is measured using a proxi (cumulative number of units produced). Organisational learning is measured by calculating decrease in unit cost.	(Darr, Argote et al., 1995)
	The success of interorganisational learning within the alliance is measured by asking the experts to evaluate how the alliance has helped the pharmaceutical firm in terms of learning new skills or capabilities and technology or research developments.	(Lane and Lubatkin, 1998)
	Learning is measured by Likert-type responses to the question 'to what extent have you learnt from your foreign parent firm (a) new technological expertise, (b) new marketing expertise, etc?'.	(Lane, Salk et al., 2001)

Table 4.16. Examples of conceptualisation and operationalisation of knowledge and learning.

4.4.7. Contexts and nature of knowledge transfer

This final section of the descriptive analysis provides a brief overview of the contexts and nature of knowledge processes found across the different studies. The purpose of this analysis is to draw some conclusions about the extent to which knowledge processes within organisations are similar to knowledge processes between organisations.

4.4.7.1. Levels of knowledge and learning processes

The levels of analysis of knowledge and learning processes refer to whether the studies address primarily processes within the organisation or across organisations. In particular, *intra-organisational* knowledge processes refer to transmission inside the same firm, such as between different business units, between different subsidiaries of the same multinationals or between franchises of the same brand. *Inter-organisational* knowledge processes refer mostly to aspects that link two different organisations via research consortia, alliances, partnerships or simply by two firms coming together for the purpose of creating learning and knowledge. A final category is *inter-personal* knowledge processes that refer primary to knowledge exchanges and sharing between individuals.

Figure 4.4 summarises the different levels of analysis at which knowledge processes have been studied in the references included in the review. Most studies in the review address knowledge processes related to transfer and dissemination within and between organisations. Studies where the level of analysis could not be identified or was not applicable (N/A) represent 39% of the total (42 citations). A total of 35 papers (33%) investigate knowledge processes within an organisation and 28 papers (26%) address knowledge processes between organisations. The remaining papers (2%) look at knowledge processes and exchanges between individuals.
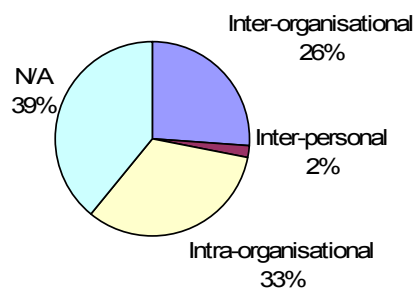
Figure 4.4. Distribution of studies by the level of knowledge processes.

Two comments emerge from this analysis: first, that there is almost an even distribution between studies that look at knowledge issues on the one hand within and on the other across organisations. The second, and perhaps more revealing comment, is that *no study looks at both knowledge processes within and across organisations together*. In other words, there is no study that clearly aims to investigate how knowledge created in one organisation is then shared with another that subsequently adopts and exploits it. A study looking in detail at interconnected processes of knowledge creation,

dissemination, adoption and use, could provide a useful integrated picture of knowledge processes, bringing together the 'within' and 'across' perspectives.

4.4.7.2. Type of knowledge

The scoping study revealed that the majority of studies treat 'knowledge' as a commodity term, and fail to differentiate amongst different kinds of knowledge, such as technical or managerial. One potential explanation is the difficulty (if not impossibility) of drawing a comprehensive typology of knowledge. For the purposes of having a general overview of the kinds of knowledge studied in the systematic review, the following classification is offered:

- Technical knowledge: refers to bio-medical, R&D, mechanical, manufacturing, engineering, new product development, safety, etc.

- Organisational practices: traditional management functions such as human resources (recruitment and selection, etc), marketing (segmentation, pricing, etc.)

- Business related: not clearly specified but is related to the organisation's business. In general terms this knowledge can be about production techniques, administrative processes, knowledge about suppliers or customers, procedural manuals, etc.

- Research-based knowledge: created in academic institutions and is subsequently disseminated to public or private organisations
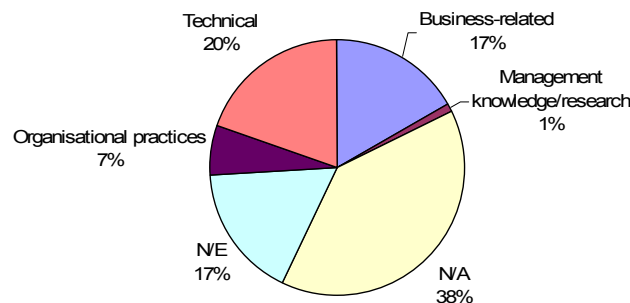
Figure 4.5. Distribution of studies by types of knowledge processes.

Figure 4.5 illustrates that most of the papers either do not specify (N/E) the type of knowledge processes they are addressing (17% of papers). Others do not address knowledge processes, thus the classification is not applicable (N/A, 38% of studies). For the papers that make explicit the nature of the knowledge being disseminated, technical is the type found in 21 papers (20% of the total), followed by those that analyse business-related knowledge with 18 papers (17% of the total), seven papers about organisational practices (7% of total) and a paper on management research-based knowledge (1% of the total).

4.5. Thematic analysis

The purpose of the thematic analysis is to synthesise in a narrative form what the literature tells us about the two main objectives of the review:

- Identify key knowledge processes within and across organisations and their associated routines.
- Identify the enablers and barriers to knowledge processes focusing on the content, source, user and process of transmission of knowledge.

Firstly, a synthesis of key knowledge processes is presented, followed by an in-depth analysis of the enablers and barriers. This analysis will be used to identify gaps in the literature and the development of propositions for further study in the thesis.

4.5.1. Knowledge processes

The review of Organisational Learning (OL) presented in chapter 3 revealed that knowledge processes and their enablers and barriers have not received systematic attention in the literature. In chapter 3, Crossan, Lane et al.*'s* (1999) OL framework was used as a starting point. Thus, the fist aim of this systematic review is to identify key knowledge processes within and across organisations. Table 4.17 details those knowledge processes and the number of studies where these knowledge processes are mentioned.

Knowledge process	No.	Knowledge process	No.	Knowledge process	No.
Knowledge or learning transfer / Knowledge processes	48	Knowledge sharing / exchange	7	Knowledge absorption	3
Knowledge acquisition / sourcing / collection / capture	26	Organisational learning	6	Ramp-up	3
Knowledge creation / generation	17	Knowledge integration	6	Knowledge development / review / support	3
Knowledge assimilation / internalisation	14	Knowledge adoption	6	Knowledge evaluation	2
Knowledge transformation / adaptation / contextualisation / validation / translation / reconfiguration	14	Knowledge search / identification / scanning	6	Knowledge acceptance	1
Knowledge communication or diffusion / dissemination	13	Knowledge interpretation / understanding	5	Knowledge replication / imitation	1
Knowledge application / exploitation	12	Knowledge / recognition / initiation	5	Knowing	1
Knowledge use / utilisation	11	Implementation	5	Knowledge storage	1
Knowledge institutionalisation / embodiment	8	Individual learning	4		

Table 4.17. Knowledge processes identified in the systematic review. Source: compiled by author.

As far as possible, the labels used by the original authors have been maintained. However, in some cases terms have been adjusted minimally. Similar terms were

initially grouped according to their meaning in the context where they appear. For example 'knowledge acquisition' was thought to be similar to 'knowledge capture'. Equally, 'knowledge creation' and 'knowledge generation' seemed to relate to the same phenomenon, thus they were grouped.

Once all relevant knowledge processes were identified, they were grouped according to their meaning and conceptual proximity. Initially, two broad categories of knowledge processes could be identified: knowledge processes across organisations and within organisations. Apparently, these two categories were different but tightly intertwined. An alternative grouping was identified consisting of the following: knowledge sourcing, knowledge integration, knowledge use and knowledge routinisation.

4.5.1.1. *Knowledge sourcing*

Knowledge sourcing refers to the different activities a firm undertakes to access relevant knowledge for its operations. This process may start by the recognition or discovery of the need to source external, potentially valuable knowledge (Johnston and Blumentritt, 1998; Nieto and Quevedo, 2005; Szulanski, 1996). Afterwards, a formal decision may be taken to proceed with the acquisition of new knowledge. This may also be an informal or individual decision that does not require formal agreement from the management of the organisation. Then, scanning or searching for knowledge starts to locate relevant knowledge sources or repositories the firm can tap into (Beyer and Trice, 1982; Hansen, 1999; Sheen, 1992; Tranfield, Bessant et al., 2003). After appropriate knowledge is found, firms will aim to acquire it. The acquisition of knowledge is a widely-cited knowledge process within studies and forms a critical aspect of absorptive capacity (Cohen and Levinthal, 1990; Van den Bosch, van Wijk et al., 2003; Zahra and George, 2002).

Several mechanisms used to acquire knowledge are identified in the literature including: knowledge acquired from headquarters within a multinational corporation (MNC) (Gupta and Govindarajan, 2000; Martin and Salomon, 2003; Minbaeva, Pedersen et al., 2003; Tsang, 1999), engagement in R&D collaborations and co-authoring of scientific knowledge (Cockburn and Henderson, 1998; Feller, 2002; Liebeskind, Oliver et al., 1996), alliances and partnerships (Lofstrom, 2000; Wagner, 2003), joint ventures (Dhanaraj, Lyles et al., 2004; Pak and Park, 2004), knowledge acquired from branches of a franchise (Darr, Argote et al., 1995), structured efforts to acquire knowledge from other units within the same firm (Hansen, 2002), and particularly relevant for this thesis, associations with universities and business schools (Agrawal, 2001; Rynes, Bartunek et al., 2001; Twomey, Twomey et al., 2000).

4.5.1.2. *Knowledge integration*

Knowledge integration refers to the process of filtering and incorporating knowledge into the operational and social systems of the firm. Knowledge integration is perhaps the most intricate of knowledge processes, as it involves subtle, often not observable processes. Some of the characteristics of knowledge such as tacitness or social embeddedness make some knowledge processes difficult to articulate. Knowledge integration is thus an approximation, grounded in existing studies, to describe a phenomenon that is situated and provisional (Blackler, 1995), collective (Spender,

1996a; Tsoukas and Vladimirou, 2001), tacit (Polanyi, 1966), socially constructed (Mizruchi and Fein, 1999) and dynamic (Nonaka, 1994).

The first process of knowledge integration is the *understanding* and *interpretation* of external information. Knowledge needs to be understood (Lane, Salk et al., 2001; Van den Bosch, van Wijk et al., 2003) and interpreted (Boland Jr., Singh et al., 2001; Inkpen and Dinur, 1998) in order to be integrated into the organisation. Interpretation is mediated by mechanisms of *transformation* (Zahra and George, 2002; Van den Bosch, van Wijk, et al., 2003) which may take to form of *adaptation* (Leseure, Bauer, et al., 2004), *contextualisation* (Tranfield, Bessant, et al. 2003) or *translation* (Carlile, 2004; Gherardi and Nicolini., 2000). In other words, knowledge is changed and shaped to better serve the purposes of the recipient, and this is affected by the historical and social context in which these processes occur.

Within knowledge integration another critical process is *assimilation*, an aspect that is mentioned by a number of authors (Cummings and Teng, 2003; Easterby-Smith, Graca et al., 2004 ; Gilbert and Cordey-Hayes, 1996 ; Gopalakrishnan and Santoro, 2004 ; Kim, 1998 ; Lane and Lubatkin, 1998 ; Lane, Salk et al., 2001 ; Lin, Tan et al., 2002 ; Major and Cordey-Hayes, 2000 ; Matusik and Heeley, 2005 ; Nieto and Quevedo, 2005 ; Simonin, 2004 ; Van den Bosch, van Wijk, et al., 2003 ; Zahra and George, 2002). Other contributions talk about *adoption* particularly in the context of management practices (Lenox and King, 2004; Leseure, Bauer, et al., 2004; Rynes, Bartunek et al., 2001; Watts Sussman and Schneier, 2003; Zeitz, Mittal et al., 1999). Other authors (Cohen and Levinthal, 1990; Eriksson and Chetty, 2003; Sparkes and Miyake, 2000) use the term *absorption* of new knowledge.

In the literature other processes are identified such as individuals' willingness to *accept* new knowledge (Gilbert and Cordey-Hayes, 1996) and readiness to *share* it and to engage in knowledge *exchanges* (Ciborra and Andreu, 2001; Hansen, 1999; Hansen, 2002; Ipe, 2003; Levin and Cross, 2004; Matsuo and Easterby-Smith, 2003; Sung and Gibson, 2005).

The last process that has been classified into knowledge integration is the internal *communication, diffusion* or *dissemination* of knowledge which is also mentioned in a number of studies (Beyer and Trice, 1982; Gherardi and Nicolini., 2000; Gilbert and Cordey-Hayes, 1996; Johnston and Blumentritt, 1998; Liao, Welsch et al., 2003; Minbaeva and Michailova, 2004; Rich, 1991; Rogers, 1995; Rynes, Bartunek et al., 2001; Sheen, 1992; Sparkes and Miyake, 2000; Tsai, 2001; Tsang, 1999). To a great extent, all the knowledge integration processes mentioned serve to construct meaning using the communication strategies available within the firm.

The label 'knowledge integration' is borrowed from Grant's (1996) contribution although other authors have used it as well (Crossan, Lane et al., 1999). Grant sees knowledge integration as the essence of organisational capabilities. Knowledge integration is a concept that nicely synthesises all the processes described above, from understanding to knowledge exchange. The concept 'integration' in the context of this thesis must be seen as the addition or amalgamation of all the knowledge-processing tasks that sit between knowledge sourcing and knowledge use.

4.5.1.3. Knowledge use

The third main knowledge process is 'knowledge use'. Knowledge use or utilisation is also an ambiguous aspect of organisational knowledge. The reason is that there is no agreed definition of knowledge use or utilisation as such, due to its complexity and often unobservable nature. Knowledge utilisation is difficult to conceptualise, even observe, because when knowledge is accessed by a user, he/she may modify it, use it partially in different ways, or justifiably not use it at all. Even when different ways of using knowledge can be found, it is difficult to ascertain whether one form of use precedes another (Rich, 1991). A traditional approach to defining knowledge utilisation is "the extent to which information leads to the reduction in uncertainty in decision makers" (Patton, 1978, p.50). However, this definition is limited, because "it is impossible to conceptualise the utilisation of knowledge without considering the situation in which the utilisation will occur" (Larsen, 1980).

Three forms of knowledge use are salient in the literature of the utilisation of social science: instrumental, conceptual and symbolic use (Beyer and Trice, 1982). *Instrumental* use involves acting on research results in specific, direct ways. Instrumental use is most common among people who are close to the research projects rather than among high-level decision-makers. *The conceptual* use of knowledge involves using research results for general clarification; therefore influencing actions in indirect ways. *Symbolic* use entails using knowledge to legitimate positions, or using research results to justify actions taken for other reasons. This type of use has also been called 'strategic' (NCDDR, 1996), because it is related to "the manipulation of knowledge to attain specific power of profit goals such as political power" (NCDDR, 1996 p. 4-5). It can also be used to support positions (political model) or for tactical reasons such as to delay action, deflect criticism, justify actions, or enhance prestige (Weiss, 1979).

Despite the hurdles in defining what knowledge *use/utilisation* is, it is worth looking at the related processes found in the review. Not surprisingly, various authors (Beyer and Trice, 1982; Hislop, 2003; Johnston and Blumentritt, 1998; Kostova, 1999; Lane and Lubatkin, 1998; Leseure, Bauer, et al., 2004; Minbaeva, Pedersen et al., 2003; Rich, 1991; Soo, Devinney et al., 2002; Tsoukas, 1996; Twomey, Twomey et al., 2000) employ the term knowledge use or knowledge utilisation. Szulanski (1996, 2000) uses the term 'ramp-up' to denote the use of knowledge and management practices and the resolution of unexpected problems.

Knowledge *application* and *exploitation* are also widely employed as synonyms of use (Jensen, Szulanski et al., 2003; Johnston and Blumentritt, 1998; Lane, Salk et al., 2001; Lin, Tan et al., 2002; Nieto and Quevedo, 2005; Simonin, 2004; Tranfield, Bessant et al., 2003; Van den Bosch, van Wijk, et al., 2003; van den Bosch, Volberda et al., 1999; Zahra and George, 2002). Knowledge application and exploitation refer to the actions that firms put into place to extract value from the knowledge and to generate competitive advantage. For the particular case of management practices the term *implementation* (Kostova, 1999; Leseure, Bauer, et al., 2004; Sung and Gibson, 2005; Szulanski, 1996; Szulanski, 2000) is preferred to the term *application* as it better captures the processes that organisational practices undergo before they become engrained in the firm's routines. The implementation and application of organisational

practices can be done by replication (copying a whole capability or practice) or imitation (important aspects of a capability are implemented) (Zander and Kogut, 1995).

4.5.1.4. Knowledge routinisation

The last main knowledge process identified in the literature is knowledge routinisation. It refers to the incorporation of new, externally-generated knowledge into the day-to-day operations, organisational culture and mindset of the firm. When this occurs, knowledge has become embedded and engrained in the routines of the organisation, increasing the organisation's knowledge base.

Zeitz, Mittal et al. (1999) distinguish between the adoption and the entrenchment of a practice. Whilst adoption entails the selection and initial use, entrenchment refers to the presence of a practice where abandonment is unlikely even under extreme pressure. 'Entrenched' practices are, according to Zeitz, Mittal et al (1999), organisational practices that address deep aspects of an organisation; involve every level of the organisation; are driven by a need for congruency between the organisation and its environment; are affected by external and internal stakeholders of the organisation; and concern technology, financial and legal considerations. In other words, these practices become an integral part of the organisation and are unlikely to be abandoned even under high pressure.

Across the studies, there are some other knowledge processes that arguably form part of knowledge routinisation. The first is knowledge *evaluation* (Tranfield, Bessant et al., 2003) or *review* (Bhatt, 2000) which is a formal or informal process that normally takes place after initial implementation to assess how effective a set of knowledge has been in achieving its intended outcome. When knowledge has proved useful *support* is found within the organisation to sustain knowledge applications over time, leading to re-innovations by the application of knowledge elsewhere (Tranfield, Bessant et al., 2003) and by *improving* that body of knowledge (Kim, 1998) within the firm. Finally, knowledge *institutionalisation* and *embodiment* (Beyer and Trice, 1982; Gherardi and Nicolini., 2000; Gopalakrishnan and Santoro, 2004; Inkpen and Dinur, 1998; Johnston and Blumentritt, 1998; Matsuo and Easterby-Smith, 2003; Szulanski, 1996; Zeitz, Mittal et al., 1999) also form part of routinisation processes. They refer to the 'solidification' of knowledge into the way an organisation operates.

Table 4.18 summarises the knowledge processes identified in the review, grouped into four knowledge processes.

4.5.2. Towards a model of knowledge processes within and across organisations

The knowledge processes presented are the result of a methodical examination of all knowledge-related processes that appear in the studies contained in the systematic review. Two key encompassing processes that have not yet been defined are *knowledge creation, absorptive capacity* and *knowledge transfer* and are widely used in the literature

Knowledge creation is argued as sitting in a central position at the intersection of the four knowledge processes described earlier. Knowledge creation results from the interaction of tacit and explicit knowledge (Nonaka, 1994) and from the interactions

among individuals that trigger the social construction of knowledge. New knowledge, as such, is not created in a pure sense, but, following Nonaka's (1994) SECI model, knowledge emerges from the socialisation of individuals (processes of sharing, exchange, diffusion and communication), externalisation of tacit knowledge (evaluation, review and development), combination (acquisition, capture, collection and storage) and internalisation (interpretation, translation and understanding). For this thesis, the definition of knowledge creation that is adopted is both the result and the process of sourcing, integrating, using and routinising knowledge.

Knowledge processes	Knowledge processes included	Explanation
Knowledge sourcing	- Recognition (of the need for knowledge) - Initiation - Search / Scanning - Identification - Acquisition / capture - Collection	Knowledge sourcing can be summarised as the incorporation of knowledge into the structure of the organisation or unit or the acquisition by individuals of relevant knowledge. The acquisition may take several forms: alliances, research consortia, hiring specialised personnel, buying documents, etc.
Knowledge integration	- Interpretation / understanding - Absorption / assimilation - Acceptance - Adoption - Adaptation / transformation - Sharing / exchange - Internal communication, diffusion / dissemination	Knowledge integration is a subtle non-observable knowledge process considered a key organisational capability. It synthesises all the processes that somehow occur between knowledge sourcing and knowledge use.
Knowledge use	- Replication - Imitation - Use / utilisation - Application / implementation - Exploitation	Knowledge use refers to the instrumental, conceptual and symbolic utilisation of knowledge resources and management practices to obtain organisational benefits and gain competitive advantage.
Knowledge routinisation	- Review / evaluation - Re-development - Support - Embodiment - Institutionalisation - Storage	Knowledge routinisation is conceptualised as the incorporation of knowledge into the day-to-day operations, organisational culture and mindset of the firm. It occurs when knowledge has become embedded and engrained in the routines of the organisation increasing its knowledge base as serving a base of further knowledge generation.

Table 4.18. Critical knowledge processes within and across organisations.

Absorptive capacity (AC) is a term coined by Cohen and Levinthal (1990), who define it as the "ability of a firm to recognise the value of new, external information, assimilate it, and apply it to commercial ends" (p. 128). Zahra and George (2002) redefined AC as the set of organisational routines and processes by which firms acquire, assimilate, transform and exploit knowledge for purposes of value creation. Both definitions emphasise the process aspect (recognition, assimilation, transformation and exploitation) as well as the outcome (commercial gains, value creation) aspects of knowledge and learning.

Knowledge transfer, a concept traditionally used to denote the transmission from a sender unit to a recipient unit, in this thesis is conceptualised primarily as a social process. For many authors knowledge transfer is argued to be the transmission of some semi-tangible or tangible asset. This view of knowledge transfer places an emphasis on the 'object', i.e. the knowledge. In this thesis, 'knowledge' is conceptualised not as an

object but also as a process, thus placing more emphasis on the transfer and the subjects involved in it. To transfer, in the context of this research, is not simply to pass on something but to jointly create it. Cummings and Tang (2003) adopt an 'internalisation approach' to knowledge transfer, defining knowledge transfer success as "the degree to which a recipient obtains ownership of, commitment to, and satisfaction with the transferred knowledge (p.42)". This definition suggests that intrinsic and social aspects such as commitment, ownership, etc. are involved and are a fundamental part of the transfer.

The four processes identified – knowledge sourcing, integration, use and routinisation – must not be considered linear, ordered, or predictable phenomena. These processes are rather messy, and overlapping. For instance, knowledge integration may happen when knowledge is being sourced, tentative use may occur in parallel to knowledge integration, and the routinisation of knowledge happens after and while knowledge has been used. Overall the knowledge processes mentioned overlap and are tightly intertwined.

Figure 4.6 shows how these knowledge processes are grouped into the four main knowledge processes. The overlap between knowledge processes represents the parallel occurrence of knowledge processes. The irregular outline of the shapes symbolises the messy, often uncontrollable nature of these knowledge processes.

As has been argued, knowledge creation occupies a central position in the model as well as absorptive capacity. This reflects the fact that both knowledge creation and absorptive capacity are concepts that integrate various processes. Similarly knowledge transfer stands above involving all processes and also indicating its cyclical nature.
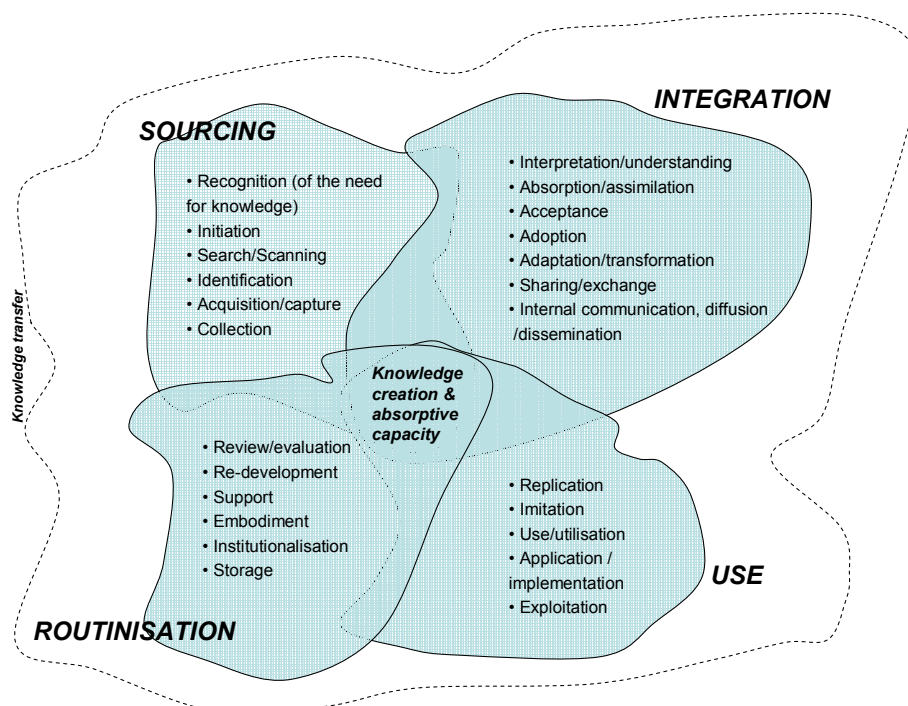
Figure 4.6. A preliminary model of knowledge processes. Source: compiled by author.

4.5.3. Enablers and barriers to knowledge processes: the content of knowledge

The second main objective of this systematic review is to identify the enablers and barriers of knowledge processes within and across organisations. The framework for the analysis of enablers and barriers and the groupings into 'source', 'content', 'user' and 'process' was derived from the scoping study. The groupings must be interpreted flexibly. This grouping is used to organise the literature around what facilitates and what hinders knowledge processes.

The following provides a detailed description of each of the enablers and barriers identified in the literature. Summary tables in the form of 'what we know' and 'what we do not know' are presented. 'What we know' refers to aspects for which enough evidence is available and conclusions may be drawn. 'What we do not know' refers to themes for which there is either inconclusive or conflicting evidence. In the following sub-sections, enablers and barriers of knowledge processes are presented separately. Barriers must not be taken as the opposite of enablers. For instance, direct communication facilitated by physical proximity is believed to aid knowledge transfer (Kalling, 2003), but it does not imply that firms situated far from each other, cannot experience successful transfers (Cummings and Teng, 2003). Motivational factors are important in facilitating knowledge processes. However, even in the absence of motivation, successful knowledge transfer can occur if ability and adequate resources compensate for lack of willingness to transfer.

The content refers primarily to the characteristics of knowledge, and how these can facilitate or hinder knowledge processes. This subsection is divided into three categories: 'enablers', 'barriers', and a third category with factors that are unclear. The content of knowledge becomes a key enabler when there is correspondence of knowledge bases between the source and the recipient, and when the nature of the knowledge or practice is perceived as compatible with existing practices within the firm. In the absence of perfect compatibility, a certain degree of adaptability will ease the transfer process. Another critical characteristic that facilitates the absorption of knowledge is the perceived value of the knowledge being processed. Aspects such as clarity, explicitness and controllability may contribute to greater perceived value. These aspects are now explored in more detail.

4.5.3.1. Enablers of the content of knowledge

One of the elements that has gained most agreement across studies of knowledge transfer is the need for a certain degree of *overlap between the knowledge bases* of the source and the recipient. In Cohen and Levinthal´s (1990) seminal paper, 'prior related knowledge' such as basic skills, shared language, and recent scientific or technological developments were found to be critical in enhancing absorptive capacity. Overlapping knowledge domains enables mutual understanding and diverse knowledge bases facilitate learning from the other party. The extent to which knowledge can be interpreted will depend on the type of knowledge previously held. When someone perceives new knowledge as too distant from his/her current knowledge, new knowledge will be judged irrelevant. Too similar knowledge bases may lead to a

perception of the other party's knowledge as too obvious and uninteresting (Davis, 1971).

A common understanding of principles and techniques is positively associated with inter-organisational learning particularly when some of the problems that the teacher company experiences are also present in the student company (Lane and Lubatkin, 1998). Overall, research suggests that prior related knowledge bases (Argote, McEvily et al., 2003; Eriksson and Chetty, 2003; Kim, 1998; Lofstrom, 2000; Tranfield, Bessant et al., 2003; Zahra and George, 2002) in the form of experience, technical competence and human capital expertise are positively related to inter-firm learning.

Knowledge integration processes have been identified as a critical factor in understanding knowledge processes. Integration requires that before new knowledge is assimilated into the core routines of the organisation, it must be found *acceptable* to the individuals (Gilbert and Cordey-Hayes, 1996) and *compatible* with recipients' current practices, values and culture (Rogers, 1995; Kostova, 1999).

New knowledge in the form of organisational practices is more likely to be integrated into the recipient organisation if the challenges to the status quo it may incorporate are *favourable to the user* (Beyer and Trice, 1982). In this process, practices have to fit with structural properties of the local context, thus, adaptation is critical (Leseure, Bauer, et al., 2004). As Argote and Ingram (2000) argue, the relationship between content of knowledge and performance is mediated by that knowledge's adaptability, as knowledge that cannot be adapted may have negative effects on performance. Tranfield, Bessant et. al. (2003) identified the contextualisation of knowledge as a key component of a process model of knowledge management routines for innovation.

Knowledge has to be *perceived as valuable* for the appropriate resources to be allocated to facilitate integration and use. The value of knowledge has been identified as a key mechanism to enhance the recipient's attempts to use new knowledge (Gupta and Govindarajan, 2000; Kalling, 2003; Matsuo and Easterby-Smith, 2003). The concept 'valuable knowledge' is rather general, and different studies specify knowledge value in terms of relative advantage (Rogers, 1995), desirability (Pak and Park, 2004), and criticality of the problems that it aims to solve (Soo, Devinney et al., 2002).

For the purposes of this thesis, 'perceived value' and 'relevance' of research are considered particularly important. In the systematic review, it was found that profitability and applicability (rather than just empirical validity and logical precision) were key enablers to foster the integration and use of knowledge in addition to research content that is relevant to user's needs (Beyer and Trice, 1982). Usefulness has also been identified as a key facilitator to enhance the use of management research (Rynes, Bartunek et al., 2001). Relevance can be enhanced by the alignment between knowledge artefacts and knowledge discourses and by ensuring that knowledge is put to work by situated actors in situated work practices and in local interpretations (Gherardi and Nicolini, 2000).

Within the debate about how to make research more relevant to potential users, *clarity* stands out as a quality that knowledge has to possess to become an effective vehicle for communication (Latham and Latham, 2003). As Rich (1991) argues, research results

conveyed in brief, clearly written reports that contain actions which could potentially be taken facilitates the integration and use of knowledge. Similarly, Beyer and Trice (1982) found that clear-cut messages and concreteness in language facilitate communication and uptake.

Explicitness and tangibility have been found to have a positive effect on the degree of transfer. Zander and Kogut (1995), in their study of transfer and imitation of organisational capabilities, found that codifiability and teachability of knowledge increase the speed of transfer. Chen (2004), looking at the effects of knowledge attributes on transfer performance, argues that the explicitness of knowledge positively affects transfer.

It can be confidently argued that a minimum degree of articulation of tacit knowledge (Boisot, 2002) is needed to enhance knowledge processes. A certain degree of tangibility can enable firms to take immediate actions (Major and Cordey-Hayes, 2000). Similarly, observability of results is important, as potential knowledge adopters and users want to see the observable results of an innovation or of the knowledge being transferred. Overall, the more codified and teachable the knowledge, the more likely it will be transferred to a third party (Kogut and Zander, 2003).

4.5.3.2. Barriers of the content of knowledge

The previous section presented the argument that explicit knowledge facilitates knowledge processes. Now, a detailed account is provided of those studies that found that tacitness is a key barrier. Organisational routines and organisational knowledge have a *high degree of tacitness which is often believed to hinder* knowledge processes (Argote, McEvily et al., 2003; Cohen and Levinthal, 1990; Kalling, 2003; Matsuo and Easterby-Smith, 2003; Ordoñez de Pablos, 2004). Tacit knowledge is more difficult to transfer because it often becomes complex, and requires related experience, trial and error, demonstration, observation and imitation to be transferred. Tacit knowledge is often collective, created and possessed by a large number of individuals and thus, becomes harder to collect and transmit. Tacitness requires extensive interaction for knowledge to be absorbed (Inkpen and Dinur, 1998). Face-to-face encounters facilitate sharing knowledge that is embedded in social exchanges (Lam, 1997). Cummings and Teng (2003) found that when knowledge is difficult to articulate, it becomes more difficult to transfer.

Causal ambiguity is another barrier to knowledge processes, which occurs when "the precise reasons for success or failure in replicating a capability in a new setting cannot be determined even ex-post" (Szulanski, 1996 p.30). Causal ambiguity and uncertainty as to the benefits of the practice may hinder the initiation process (sourcing) as well as the resolution of problems in the ramp-up (integration) stage when the cause-effect of problems is unknown (Szulanski, 2000). Causal ambiguity has been found to have a direct negative effect on knowledge transfer (Argote, McEvily et al., 2003; Kalling, 2003; Simonin, 2004) as the more ambiguous the knowledge is, the more difficult it is to transfer.

When new knowledge or a novel practice is being considered for adoption and use, uncertainty about the extent to which that practice has been or can be successful may

impede full integration and transfer of that knowledge / practice (Szulanski, 1996; O´Dell and Grayson, 1998). In the absence of *proven previous success,* trust in the source becomes particularly important in order not to compromise the overall effectiveness of the knowledge processes.

What we know	Explanation
Similarity and complementarity of knowledge bases ease knowledge transfer.	The extent to which knowledge can be interpreted will depend on the type of previous knowledge.
Acceptability and compatibility of knowledge with the firm's current practices and culture facilitate transfer.	Before new knowledge can be assimilated into the core routines of the organisation, it must be found to be acceptable to the individuals and compatible with current practices, values and culture.
External knowledge needs to be adaptable to a certain extent to facilitate transfer.	Adaptation is critical to customise external knowledge and make it more acceptable to individuals.
The more relevant the knowledge is perceived to be, the more easily it will be integrated and used.	The value of knowledge has been identified as a key mechanism to enhance the recipient's attempts to use new knowledge.
Clarity, explicitness and tangibility facilitates knowledge transfer	These qualities of knowledge make knowledge more easily transmittable thus they enhance the chances of effective transfer.
Tacitness is related to more difficulty in transferring knowledge	Tacit knowledge is more difficult to transfer because it often becomes complex, requires experience to grasp, trial and error, demonstration, observation and imitation to be transferred. Tacit knowledge is often collective and embedded in routines, making transfers more difficult.
Causal ambiguity and unproven success hinder knowledge processes	If there is uncertainty about why knowledge may be successful or its past success is unknown or unproven, the potential recipient will have less incentive to engage in knowledge integration and use.

Table 4.19. What we know about the content of knowledge. Source: compiled by author.

4.5.3.3. Elements related to the 'content' where the effect on knowledge processes is unclear

Across the studies included in the review, two aspects are considered critical to learning and knowledge processes. The first relates to the *quality of research* when transfers involve a research organisation and a user organisation. Beyer and Trice (1982), after reviewing how academic research is used in practice, found in some studies that quality may play a role in facilitating the uptake of knowledge. However, Beyer and Trice also found studies where research quality did not have any effect whatsoever. Perceived credibility of the source is indeed associated with more knowledge uptake, but the extent to which more reliable and valid knowledge leads to better knowledge processes is unclear.

The second theme relates to the mechanisms that explain whether *external knowledge can be perceived as more valuable than internal knowledge and vice versa.* Some research (Argote, McEvily et al., 2003) indicates that external knowledge may be more valued than internal knowledge if it elevates members' status. There is not enough evidence to advocate external over internal information, nor there is enough understanding to ascertain when and why a user organisation may prefer to look 'outside' instead of 'inside' for new knowledge.

What we do not know	Implications
How the quality of research (or knowledge) affects the degree of utilisation	The concept 'quality of knowledge' needs to be explored in more depth.
The circumstances under which it is preferred to source knowledge externally than to search for it internally are unclear	There is enough understanding to ascertain when and why a user organisation may prefer to look 'outside' instead of 'inside' for new knowledge.

Table 4.20 What we do not know about the content or nature of knowledge. Source: compiled by author.

4.5.4. Enablers and barriers related to practices

Organisational and individual practices emerge from the literature as a significant group of enablers and barriers to knowledge processes. This subsection details the practices that appear critical in enhancing or hindering how knowledge is sourced, integrated, used and routinised.

4.5.4.1. Enabling practices

Various studies mention the positive effects of *participation, engagement and direct contact* amongst individuals in fostering knowledge processes. Meetings, interactive encounters, and person-to-person contacts were all found to facilitate the transfer of knowledge in a wide range of contexts. Kalling (2003) found that richness of communication channels facilitates the transfer of best practices across manufacturing plants. Wagner (2003) argues that in partnerships, close relationships, co-operation with the partner, and interactions that stimulate teamwork and communities of practice will enhance the ease of knowledge processes.

Sung and Gibson (2005) identified *person-to-person contacts*, knowing whom to contact and variety of communication channels as important enablers in Research and Development consortia in the computer industry and semiconductor technologies industry. According to Tranfield, Bessant et al. (2003) small-size entities that enable regular, face-to-face relationships are thought to facilitate knowledge processes in organisations pertaining to various sectors. Chua (2002) found a positive correlation between the level of social interaction and the quality of knowledge created in higher education organisations. Finally, Hislop (2003) highlighted the importance of social processes and interaction for effective integration in investigations conducted in manufacturing and service firms.

Focusing on the relational aspects in knowledge transfer projects *between academics and practitioners*, there is also wide agreement that direct contact between researchers and managers is most effective in order to achieve utilisation of knowledge (Beyer and Trice, 1982) and to foster academic-business outcomes (Twomey, Twomey et al., 2000). Overall, the selection of dissemination channels that are preferred by the user will facilitate the transfer of knowledge between academics and practicing managers (Rynes, Bartunek et al., 2001). The exposure of each community to the kinds of issues the other community faces – i.e. managers to theoretical issues and academics to practical problems – will strengthen the communication between the two groups (Latham and Latham, 2003). Beyer and Trice (1982) refer to this idea as linking the information processes that occur in the user systems with the research production

systems. This can be achieved with individuals such as Organisational Development specialists, internal researchers, consultants and "applied social scientists".

In section 4.5.1 (Knowledge processes) one of the components of knowledge integration is *the translation of knowledge* from one context to another (in the context of this thesis from the academic to the industry). Personal contacts between academics and practitioners help the translation process because much of this translation occurs within the knowledge creator's relational networks and interactions (Gherardi and Nicolini., 2000).

The internalisation of new knowledge is also facilitated by *training and other socialisation mechanisms* that enable the transmission of beliefs, values and technical information, all of which helps in embedding organisational practices to endure and resist pressure for change (Zeitz, Mittal et al., 1999).

In the literature, *systems to measure the performance of knowledge transfer* projects or initiatives have been found useful in enhancing knowledge processes. Bjorkman, Barner-Rasmussen et al. (2004), in their study of the impact of organisational mechanisms on inter-unit knowledge processes in multinational corporations, found that performance evaluation that focuses on knowledge transfer increased the knowledge transferred. The higher the perceived importance attached to knowledge transfer by headquarters when evaluating the performance of the subsidiary, the more knowledge was transferred from the subsidiary to other corporate units. In their contribution to understanding the enablers for the identification and transfer of practices within the firm, O´Dell and Grayson (1998) point at benchmarking processes to identify, understand and adapt outstanding practices from organisations, including one's own firm, with best practice teams and knowledge and practice networks. Overall, the greater the measurement of performance effects, assuming 'the effects' are perceived to be positive, the greater the adoption of an organisational practice (Zeitz, Mittal et al. 1999).

What we know	Explanation
Participation, engagement and direct contact amongst the members foster knowledge processes	Meetings, interactive encounters, and person-to-person contacts all facilitate the transfer of knowledge in a wide range of contexts, particularly when the knowledge is highly tacit and complex.
Processes that enable knowledge translation are required for effective knowledge integration	Knowledge translation processes can be facilitated by relational networks and interactions
Systems to measure the performance of knowledge transfer projects or initiatives have been found useful in enhancing knowledge processes	Performance measurement systems increase the amount of knowledge transferred and help the adoption of organisational practices.

Table 4.21. What we know about the process of transmission. Source: compiled by author.

4.5.4.2. *Practices of which the effects on knowledge processes are unclear*

Table 4.21 summarises the literature, arguing that that direct and person-to-person contacts facilitate the transfer of knowledge. However, close interaction between the source and the user over time may create occasions where conflict is likely to appear. As in any collaborative arrangement, in academic-consulting transfer projects differences between the source and the user may occur, blurring the fine line between

productive and unproductive collaboration. Sources of potential conflict and how these could be mitigated is an open question worth exploring. In addition, *the extent to which conflict is always detrimental* for knowledge processes is unclear. Beech, MacIntosh et al. (2002) studied the development of knowledge through a multi-theoretical perspective (psychodynamics, social construction and complexity theory). They argued that structures of interactions that serve to avoid creative conflict are barriers to knowledge development. This means that some degree of creative conflict may be productive if it helps to challenge unreasonable principles, contextualise and make new knowledge more relevant to the user organisation.

Another aspect which is not fully clear from the findings of the studies included in the review is the extent to which *structured mechanisms for knowledge processes* are preferred to *unstructured mechanisms*. Ipe (2003) argues that opportunities to share knowledge can be purposive learning channels and relational learning channels. Purposive channels provide individuals with a structured environment in which to share knowledge (primarily explicit). In other words, individuals engage in activities the purpose of which is to stimulate knowledge, such as focus groups or project teams. Relational learning channels are unstructured mechanisms that allow the building of trust and 'relational embeddedness'. There is little research addressing how structured and unstructured opportunities should be balanced to enhance learning and knowledge processes.

Looking at knowledge processes as a myriad of interconnected processes that develop gradually, a critical question concerns *the role of time in facilitating knowledge processes*. There is scant research looking at the effects of the duration of the relationship in knowledge transfer projects. Kotabe, Martin et al. (2003), in their study of Japanese and US automotive suppliers, found that the effect of ordinary technical exchanges on supplier performance improvement does not vary with relationship duration. The effect of higher-level technology transfer, however, grows more positive as relationship duration increases. Dhanaraj, Lyles et al. (2004), in their study of the transfer of explicit and tacit knowledge in international joint ventures found that the transfer of tacit knowledge has a positive impact on the transfer of explicit knowledge and that this effect strengthens over time. Intuitively, it is reasonable to expect that the longer the relationship the stronger the link between two parties, leading thus to improved knowledge processes, but this aspect needs stronger evidence.

What we do not know	Implications
The role of conflict in knowledge processes	It is unclear the extent to which conflict is always detrimental for knowledge processes as in knowledge transfer projects there can be creative conflict that enriches the knowledge processes.
The extent to which structured mechanisms for knowledge processes are preferred to unstructured mechanisms	There is no much research addressing configurations of both structured and unstructured mechanisms for knowledge transfer within the organisation.
The role of time in facilitating knowledge processes	Although some evidence has been found on the positive effects of protracted time in knowledge processes, there is scant research looking at the effects of the duration of the relationship in knowledge transfer projects.

Table 4.22. What we do not know about the process of transmission.

4.5.5. The source of knowledge

Managing organisational knowledge effectively will depend on the willingness and capabilities of the source. Without motivation and ability, successful knowledge transfer is unlikely to happen. Motivational factors are explained first, making special reference to the role of incentives in the motivation to transfer, trust and the perceived trustworthiness of the source. Then, elements related to structural characteristics of the source are explained. Relational and network aspects are presented, though network factors are explored in more detail in the section focused on the user. Finally, the similarity between the source and the user and the way the supplier structures the transfer is outlined.

4.5.5.1. Enablers of knowledge processes related to the source

Individuals' *motivation to transfer* is often underpinned by their intentions and autonomy. Intentions are shaped by how individuals approach the world and make sense of their environment. Autonomy gives them freedom to absorb knowledge and is a driving force for metaphor creation (Nonaka, 1994). Successful knowledge transfer, such as academic–industry transfer often requires the interpretation of complex data and research findings. The source of knowledge needs to be motivated to engage in a facilitation process that can enable a better use of knowledge by the recipient (Rynes, Bartunek et al., 2001).

Motivational factors are difficult to appreciate and how they are operationalised may yield conflicting results. For instance, Gupta and Govindarajan (2000), in their study of knowledge processes within multinational corporations, found that motivational disposition (measured by network- vs. subsidiary-based incentives for the subsidiary president) had no significant effect on knowledge outflow or inflow from peer subsidiaries. However, if measured as the economic advantage of the country of the subsidiary vs. the parent, motivational disposition of subsidiaries located in countries with a lower economic level showed a greater level of knowledge inflow.

There is no systematic investigation of *the role of incentives in fostering knowledge* processes. This would be a fruitful research avenue, as the effect of incentives on organisational learning and knowledge is a keenly debated question. From the perspective of the source, incentives have been found important in encouraging knowledge sharing in a variety of settings: intranets, knowledge-networks and knowledge management initiatives. Tangible rewards alone are not sufficient to motivate knowledge sharing among individuals and intrinsic rewards, often found in the work itself, are necessary to enhance knowledge sharing. Incentives have been argued to complement technological efforts to facilitate knowledge transfer. Technology is not the only solution to knowledge transfer, since people may be reluctant to share knowledge particularly in the absence of incentives to share (Goh, 2002). Similarly, in the context of university–industry transfer, the incentives of universities (e.g. in terms of proprietary rights of knowledge such as patenting and licensing) play a critical role in the nature of the transfer (Agrawal, 2001).

One of the intangible aspects conducive to knowledge transfer is the *trust* that exists between the source and the recipient (Szulanski, 2000). Trust is found to ease the transfer of knowledge between the source and the recipient in a number of contexts. Twomey, Twomey et al. (2000) found that the higher the level of trust, the lower the barriers to interaction between business schools and practicing managers. This result is echoed by Gopalakrishnan and Santoro (2004) who argue that the firm's trust in its university research centre partner is important for both knowledge transfer and technology transfer activities. In international joint ventures, trust between the parent and the joint venture firm, together with the relative absorptive capacity, are believed to influence the ability to understand new knowledge held by foreign parents and associated with better performance (Lane, Salk et al., 2001). In the case of alliances, Chen (2004) showed how equity-based alliances (higher component of trust) transfer tacit knowledge more effectively than contract-based alliances (lower level of trust).

Though there is wide agreement on the beneficial role of trust for knowledge processes, Szulanski, Cappetta et al. (2004) claim that trust may not always be advantageous. Trustworthiness has a complex effect on transfer, as it promotes both functional and dysfunctional processes, fostering receptivity on the one hand and lessening the perceived need for vigilance on the other. When causal ambiguity is high, trustworthiness may prove counterproductive (p.608).

How *the source of knowledge is perceived by the user* or potential user of information is important to facilitate the transfer. Source credibility influences the usefulness of information, and is positively correlated with information adoption, particularly in novice recipients (Watts Sussman and Schneier, 2003). The status of the source is found to predict knowledge transfer across individuals, the likelihood of acquisition and the degree of knowledge exchange (Argote, McEvily et al., 2003).

Following the review of behaviour-related enablers for knowledge processes, organisation-related aspects are now outlined.

A common theme across the studies in the systematic review is the need for a *certain degree of similarity* between the sender and the recipient for the effective transfer of knowledge. Similarity is a very broad term, thus the following paragraph details the existing evidence about 'what needs to be similar' between the source and user to facilitate transfer (more details are also provided in the section about the user).

Theoretical contributions, such as Argote and Ingram's (2000) claim that similarity between the tasks or 'strategic similarity' is found to have positive effects on knowledge transfer. This theoretical insight is supported by a number of empirical studies. Darr and Kurtzberg (2000) found that business strategy similarity enhances knowledge transfer among pizza delivery franchises. This result confirms similar previous findings (Darr, Argote et al.,1995) that stores that were owned by the same franchisee experienced levels of knowledge transfer not found in other stores.

Lane and Lubatkin (1998) studied knowledge transfers and learning among R&D alliances in the biotechnology and medical sectors concluding that the similarity of the partners' organisational structures, compensation practices, and research communities were positively related to interorganisational learning. Similarly, in R&D consortia in

semiconductor and computer technologies, Sung and Gibson (2005) showed that a sense of common purpose and an understanding of the nature of each other's business increased knowledge transfer.

A key aspect in assessing the extent to which two organisations are similar is the *relatedness of their knowledge bases*. This will be explored in more detail in the next subsection when elements of the user will be presented. For now, it is just worth mentioning that the possession of common knowledge (Reagans and McEvily, 2003) makes the transfer between source and recipient easier.

Knowledge processes have been characterised as messy and overlapping, somehow unpredictable. This is particularly the case for processes of tacit knowledge. Explicit knowledge, however, is more subject to structured approaches to transfer. Thus, a balanced blend of communication mechanisms will facilitate the transmission of knowledge acknowledging both the tacit and explicit components.

Formal and structured mechanisms to transfer are normally facilitated by low hierarchies, horizontal communication processes, cross-functional collaboration, and reward systems (Goh, 2002). Informal mechanisms may take the form of socialisation mechanisms (Bjorkman, Barner-Rasmussen et al., 2004) and those that promote direct communication between central units and subsidiaries (Tsang, 1999).

Overall, the source can apply two principles to enhance knowledge transfer: (1) choosing the appropriate complexity of the media: the medium used to transfer knowledge should be complex enough to handle the complexity of the knowledge being transferred and, (2) using channels that are likely to be preferred by potential recipients (Beyer and Trice, 1982).

4.5.5.2. *Barriers to knowledge processes related to the source*

Motivational factors, when present, can be effective enablers of knowledge processes, and when absent, can become significant barriers. Szulanski (1996) found that the *lack of motivation to transfer knowledge* was one of the critical impediments to the transfer of knowledge. He argued that lack of motivation could be caused by a fear of losing advantage or not appreciating potential rewards associated with the transfer.

Lack of motivation to transfer, together with the presence of conflict, was found to have a significant and negative effect on knowledge transfer in new product development in the context of international joint ventures, though no significant effect was found on the transfer of manufacturing processes, that have a higher component of explicit knowledge (Pak and Park, 2004).

A final behavioural aspect found to have a negative impact is mutual distrust between academics and practitioners in the transfer of HRM practices. Distrust, according to Latham and Latham (2003), can be the result of academics' lack of business experience and the pursuit of self-serving interests of the respective parties.

The similarity between the source and the recipient has been reported to aid knowledge processes across them. Literature shows that the *dissimilarity can become a barrier* for knowledge processes (O´Dell and Grayson, 1998). Kostova (1999), in the context of

transnational transfer of strategic organisational practices, argues that institutional distance between the countries of the recipient and the parent company is negatively associated with the success of transfer. Institutional characteristics may include regulatory (rules and laws), cognitive (schemas, frames, representations) and normative (values and norms) aspects. Indeed, some idiosyncratic aspects of the national culture may be reflected in organisational practices such as HR systems, shaping the culture of the organisation. Differences in the culture (assumptions, beliefs and duties) of the source that significantly differ from those of the recipient makes transfer more difficult (Ordoñez de Pablos, 2004).

What we know	Explanation
If the user is motivated to engage in productive knowledge processes, the effectiveness of the transfer is greater.	The transfer of knowledge often incorporates complex elements that need to be interpreted and clarified. The source is likely to engage in facilitating interpreting processes if it is motivated to transfer. Fear of losing advantages as a result of transfer will detract the source from transferring valuable knowledge.
Intrinsic and extrinsic rewards facilitate knowledge processes.	Rewards and incentives complement technological structures that facilitate knowledge transfer.
Trust facilitates knowledge transfer.	Trust reduces the perception of opportunistic behaviour, thus, facilitating the opening up and sharing of valuable knowledge. Trust may become dysfunctional if it lessens the need for vigilance in transfer relationships, particularly when causal ambiguity is high.
Trustworthiness and credibility of the source will increase the recipient's receptivity.	How credible, trustworthy and reputable the source of knowledge is perceived to be by the user (or potential user) is important to facilitate knowledge transfer, as it influences the perceived usefulness of information, and thus its adoption.
A certain degree of similarity between the source and the user facilitates knowledge transfer. Strong cultural differences hinder knowledge processes	Similarity between the tasks or 'strategic similarity', business strategy, organisational structures, compensation practices, aid in the transmission of knowledge and interorganisational learning. If the assumptions, beliefs and duties of the parties differ significantly, the transfer may become more difficult.
Formal and informal mechanisms are required to facilitate knowledge transfer.	The complexity of knowledge processes call for a blend of formal and informal communication mechanisms and structures. The formal ones are usually better suited to transfer explicit and less complex knowledge whilst the informal may be better positioned to aid the transfer of tactic knowledge and organisational practices.

Table 4.23. What we know about the source of knowledge in knowledge processes.

4.5.5.3. *Elements related to the 'source' where the effect on knowledge processes is unclear*

This subsection aims to clarify those factors related to the source whose effect on knowledge processes is unclear, based on the studies reviewed.

It has been argued above that cultural differences may hinder the transfer of knowledge and organisational practice, but also *cultural diversity may enhance learning*. As Inkpen and Tsang (2005) explain in a recent review of social capital, networks, and knowledge transfer, "arguments for and against partner cultural diversity as an antecedent for alliance learning have been made" (p.157). Cultural differences can make the transfer of tacit knowledge harder, but attempts to eliminate differences can block second-order learning processes. Overall, Inkpen and Tsang argue that the overall effect of cultural diversity should be beneficial to knowledge transfer.

Another contested issue is *the role of physical distance* between the source and the user in knowledge processes. Birkinshaw, Monteiro et al., (2004) found that the closer the sender is to the recipient, the better for knowledge processes in the context of headquarters and subsidiaries of multinational corporations. Kalling (2003) observed

transfers of best practice across manufacturing plants, arriving at a similar conclusion. However, Cummings and Teng (2003), in their study of technical R&D knowledge found that organisational distance (defined as the organising mode through which the source and the recipient transfer knowledge) had no significant effect on knowledge transfer success and that neither did physical distance between source and recipient.

One possible explanation may be the nature of the knowledge being transferred. The more tacit, subjective and context-specific the knowledge is (e.g. organisational practices), the closer the source and the recipient need to be to achieve satisfactory transfer. However in the case of knowledge with a high explicit component (such as technical knowledge) physical distance can be easily overcome. This claim is consistent with Dhanaraj, Lyles et al.'s (2004) who argue that in the context of international joint ventures, relational embeddedness (defined as the degree to which commercial ties are embedded in social attachments between the parent and the international joint venture) and measured by tie strength, shared systems and trust has a stronger influence on the transfer of tacit knowledge than on the transfer of explicit knowledge. The role of the tacitness/explicitness is explained in more depth in the next section.

What we do not know	Implications
The extent to which motivational aspects are critical for knowledge transfer	Evidence suggests that motivation of the source to transfer is an important element in facilitating effective knowledge processes. However, a non-motivated sender with high transfer capabilities could still be an effective source of knowledge processes.
How incentives work in facilitating knowledge processes	The literature is unequivocal in pointing to the importance of incentives. However, the types of intangible incentives that foster knowledge transfer and how they work is not sufficiently explored.
The contexts in which trust can be counterproductive	Trustworthiness has an intricate effect on transfer, as it may foster receptivity on the one hand and lessening the perceived need for vigilance, but on the other hand when causal ambiguity is high, trustworthiness may prove counterproductive.
The extent to which cultural differences between the source and the recipient hinder knowledge transfer	There is conflicting evidence as to how much the source and the recipient need to be similar to enhance knowledge transfer. Whilst some differences may lead to difficulties in transferring knowledge, they can also generate new knowledge.
When physical proximity is a requirement for effective transfer and when it is not	Although it may seem that the closer the sender is to the recipient the better for knowledge processes, this does not need to be the case in all circumstances. The contention that the transfer of complex, highly tacit knowledge is facilitated by close proximity needs to be further investigated

Table 4.24. What we do not know about the source of knowledge in knowledge processes.

4.5.6. The user or recipient of knowledge

The 'user' in this systematic review refers to aspects of knowledge processes that occur *within* the organisation. In this sense, 'user' can be associated to the 'recipient' of knowledge. In this subsection it is argued that a certain degree of change must occur to trigger knowledge and learning processes. Behavioural aspects that facilitate knowledge processes are outlined, such as motivations to process knowledge, trust, and incentives. Reference is made later to roles and structures that facilitate knowledge processes, as well as the network configurations that are most likely to facilitate knowledge processes.

4.5.6.1. Enablers for knowledge processes related to the user

Across the literature reviewed, different studies coincide in indicating that learning and continuous improvements are essential processes for change (Gilbert and Cordey-Hayes, 1996; Kostova, 1999). The readiness to adopt a practice or to engage in the acquisition of new knowledge is facilitated by the existence of strong values and beliefs about the benefits of new knowledge (Zeitz, Mittal et al., 1999). The values and beliefs reflect the culture of the organisation (Schein, 1996), thus norms and practices that advocate individual ownership of knowledge severely impede the process of knowledge sharing within the organisation (Ipe, 2003). In this sense, leadership plays an important role in establishing some of the key conditions required to facilitate knowledge transfer and to grant support when they are convinced that transfer has merit and real impact (Goh, 2002; O´Dell and Grayson, 1998). Learning lies at the core of knowledge transfer and absorptive capacity, in Kogut and Zander's (1992) words "firms learn new skills by recombining their current capabilities" (p.383).

As important as it is for the source to be motivated to transfer, it is for the *recipient to be willing* to absorb new knowledge. This motivation may foster the necessary intensity and effort to increase retrieval and to develop effective absorptive (Cohen and Levinthal, 1990). Several studies within the review echo the claim that motivation does impact positively knowledge transfer. Kostova (1999) shows how the commitment, identity and trust between the recipient unit and the parent company are positively associated with the success of knowledge transfer. Matsuo and Easterby-Smith (2003) found that knowledge sharing was facilitated by intrinsic motivation and high levels of trust in IT consulting departments in Japanese firms. In the context of multinational corporations Minbaeva, Pedersen et al. (2003) showed how the interaction between employees' ability and motivation would increase the level of absorptive capacity and thus the knowledge transfer to the subsidiaries. Other studies reinforce the idea that determination and desire to learn from a partner shows significant positive effects on knowledge transfer (Simonin, 2004), and on the creation, retention, and transfer of knowledge (Argote, McEvily et al., 2003).

A much debated question in the knowledge and learning literature is whether incentives have an effect on knowledge transfer, or whether intrinsic motivation alone can ease knowledge and learning processes. *Incentive systems* focused on people helping each other, with explicitly formulated values of care, teamwork, and assessments done by both managers and subordinates found to be useful in fostering knowledge sharing (Von Krogh, 1998). O´Dell and Grayson (1998) claim that *intrinsic rewards* are needed to share and to transmit information, as artificial rewards will not have much effect. Reciprocity has been found to be a key characteristic of effective incentive systems for learning. Receiving knowledge from others stimulates a reciprocal transfer of knowledge (Ipe, 2003).

It has been argued that *trust* in the source unit increases the recipient's willingness to use knowledge. Likewise, research indicates (Argote, McEvily et al., 2003) that trust favours knowledge processes since it alleviates concerns of appropriation and misuse by the recipient unit. According to Feller (2002), trust can be structural or calculative (based on calculative motives such as expected benefits of the relationship, and

reputation and behavioural trust (relates to the expectations that a firm has concerning the non-opportunistic behaviour of its partners).

One of the practices that critically facilitate knowledge processes is the organisation's ability to integrate external information to its internal knowledge base. *Gatekeepers* with strong extra-organisational communication, who connect the organisation to specific knowledge, fulfil this role. In addition, individuals with *boundary spanning roles* mix external and internal knowledge to create strategic capabilities (Tushman, 1977; Ciborra and Andreu, 2001). Knowledge processes are enhanced when there is an adjustment between the unit's information processing needs and the number of boundary roles. Opinion leaders also play an important role as they are often sought for advice, thus, influencing decisions and mediating the transfer of information from external information areas into the organisation's internal communication network. Rogers (1995), in her extensive review of the diffusion of innovations, highlighted that individuals make the decision to innovate, based on personal characteristics, and that this creates a diversity that makes diffusion possible. Studies that look at the enablers and barriers for the use of research in businesses and organisations confirm the need for "champions" to appreciate empirical and sound research to facilitate its application and use (Latham and Latham, 2003).

Specific investments and the allocation of resources to enhance knowledge processes is an aspect mentioned in a number of studies. These resources may take the form of training to facilitate the implementation of a practice (Leseure, Bauer, et al., 2004) or to increase the qualifications of personnel (Caloghirou, Kastelli et al., 2004). Knowledge enhancing investments are also expenditures in R&D which increase the organisation's absorptive capacity (Agrawal, 2001, Cohen and Levinthal, 1990). Other less observable or tangible resources are recruiting the best people possible, reward systems that motivate knowledge sharing and transfer, and time to source and integrate valuable knowledge such as research (Rich, 1991; Latham and Latham, 2003) or organisational practices (Szulanski, 1996).

Different studies in the review have pointed at how so*ft and loose structures are conducive to knowledge processes*. For instance, informal mechanisms and networking were found to be positively related to knowledge creation (Soo, Devinney et al. 2002). Self-organising teams are thought to foster knowledge creation as a result of their interdependence, and their redundancy (Nonaka, 1994). Loose structures are found to facilitate knowledge processes in a variety of contexts. In the context of biotechnology firms, knowledge sourcing was found to rely primarily on scientists' social networks rather than on formal arrangements (Liebeskind, Oliver et al., 1996). In international joint ventures, knowledge transfers were associated with learning processes and training competence (Lane, Salk et al., 2001), and integrative mechanisms and lateral socialisation had a significant positive effect both on outprocesses and inprocesses of knowledge within multinational corporations (Gupta and Govindarajan, 2000). Van den Bosch, Volberda et al. (1999), in their longitudinal study of publishing firms, identified tree types of organisational structures: the matrix organisational form, the divisional form and the functional structure. Their research found that the matrix organisational form had a positive effect on the levels of absorptive capacity (AC), whilst the divisional form had a moderate effect and the functional structure a negative impact on AC.

Overall, it is argued that hierarchical structures based on command and control are detrimental to knowledge processes (Tranfield, Bessant et al., 2003) whilst loosely linked structures are beneficial for these knowledge processes (Eisenhardt and Santos, 2002). The structure of the company needs to be designed to facilitate formal and informal learning and knowledge transfer processes (Kim, 1998), interactions (Lin, Tan et al., 2002), and iterations of idea generation, testing and commercial launch (Bhatt, 2000). The organisation's absorptive capacity (Cohen and Levinthal, 19990) is facilitated by the involvement in multiple groups, not just the R&D department which has traditionally been considered the driver of AC in organisations (Amesse and Cohendet, 2001).

Informal mechanisms and personal contacts are inextricably linked to the *position the agent occupies within the knowledge network*. Three aspects are critical in understanding the relationship between networks and knowledge processes: network position, density of the network and the strength of the network ties.

There is agreement in the literature reviewed that the existence of social networks and sub-networks facilitates the location and integration of valuable knowledge. The better 'connectedness' an organisation has to valuable sources of knowledge (e.g. universities) the more absorptive capacity is likely to develop (Lim, 2000; Agrawal, 2001). *Network centrality*, in particular, is positively associated with effective knowledge absorption (Kalling, 2003).

The second aspect, *network embeddedness*, is also mentioned in various studies. Knowledge transfer is more likely to occur across organisations that are embedded in a rich network (e.g. franchise, chain, alliance) than across independent organisations (Argote and Ingram, 2000; Argote, McEvily et al., 2003).

The last aspect of networks, the *strength of network ties* seems to be positively related to the ease of knowledge processes. However, this claim is not clearly supported by existing evidence. Levin and Cross (2004) found that strong ties did have a positive and statistically significant overall effect on receipt of useful knowledge, mediated by trust. However, in a separate analysis, no interaction effect between tie strength and tacit knowledge was detected. Hansen (1999) found that weak inter-unit ties helped a project team search for useful knowledge in other subunits but impeded the transfer of complex knowledge which tends to require a strong tie between the two parties to transfer. Overall, it can be said that having weak inter-unit ties speeds up projects when knowledge is not complex, but slows them down when the knowledge to be transferred is highly complex. Argote, McEvily et al. (2003), in their review of managing knowledge in organisations, argue that, overall, weak ties aid in the search for new knowledge and facilitates the ability to acquire new capabilities.

4.5.6.2. Barriers for knowledge processes related to the user

The lack of absorptive capacity and integrative capabilities has been found to be a recurrent theme in the literature used to explain the organisation's inability to exploit knowledge processes to its benefit (Szulanski, 1996). This lack of capability is often caused by a lack of individuals' intellectual capability (Sheen, 1992) or individuals' bounded rationality that constrains their ability to interpret complex realities (Dodgson,

1993). Not knowing who to go to for help or to access new knowledge has also been mentioned in the literature as a barrier for effective knowledge sharing and transfer (O´Dell and Grayson, 1998).

The *recipient's lack of motivation* is a key factor in explaining individuals' absorption and sharing of knowledge (Kalling, 2003; Szulanski, 1996). Lack of motivation may be caused by insufficient incentives to innovate or by day-to-day job pressures that restrict opportunities to explore new knowledge domains (Tranfield, Bessant et al., 2003). Lack of motivation may also be underpinned by barren contexts (Szulanski, 1996) or lack of structured mechanisms or discussion groups that allow employees to tap into each other's tacit knowledge (Soo, Devinney et al., 2002). Sometimes individuals' behaviours that emphasise the maintenance of established roles and identities impedes successful transfer of organisational knowledge (Beech, MacIntosh et al., 2002).

The structure of the organisation may facilitate or impede knowledge processes. Knowledge processes are hindered when *hierarchical structures* based on command and control govern the organisation and when cultures and *mindsets are reactive to change* (Tranfield, Bessant et al., 2003). Too strict procedural governance can inhibit innovation during joint R&D projects, and too strict safeguard mechanisms (such as strict contracts) can preclude knowledge creation and sharing between partners (Feller, 2002). Organisational structures that promote 'silo' behaviour hamper the development of conduits for knowledge transfers (O´Dell and Grayson, 1998). This may happen in big organisations which develop within them different and idiosyncratic norms, values, and coding schemes which impinge ease of communication (Tushman, 1977).

Shared languages and paradigms are particularly relevant to facilitate or hinder knowledge processes. Von Krogh (1998) argues that knowledge is created by a process of justifying the truthfulness of someone's beliefs. This justification may be impeded by legitimised language, habits, or taken for granted routines, that rule out beliefs that are not in accordance with one's own. The disconnection between the source and the recipient in terms of the language used is a key barrier in university–industry knowledge transfer. Twomey, Twomey et al. (2000) claim that the greater the activity specialisation and intra-academic communication, the harder the collaboration with businesses may be. Highly specialised languages and scientific jargon may impose limitations on the ability of the user to integrate and use new external knowledge. Using Cummings and Teng's (2003) concept of norm distance, it is argued that knowledge will be facilitated to the degree to which knowledge transfer parties share the same organisational culture and value systems.

Overall, it may seem that primarily 'soft' variables, such as motivation, structures, culture, mindsets, and languages are the mechanisms that can hamper knowledge processes. But also aspects such as *lack of investment* in strengthening knowledge structures may severely impede the organisation's ability to benefit from the knowledge processes in which it is involved. When an organisation cuts back its investments in absorptive capacity, this can jeopardise subsequent knowledge assimilation (Cohen and Levinthal, 1990). Traditionally, investments in absorptive capacity have been expenditures in R&D, but firms have a myriad of other mechanisms to source external knowledge such as alliances, partnerships, contracts, and employment of knowledgeable individuals.

What we know about the user	Explanation
A culture that promotes learning and continuous change eases knowledge processes.	Culture is reflected in the values, norms, and practices of the organisation. These elements are important to facilitate the sourcing, integration, and use of knowledge.
The motivation of individuals is crucial to facilitate knowledge sharing behaviours.	To develop knowledge processing capabilities, individuals require intensity and effort which is facilitated by motivational factors. Intrinsic motivation is thought to be the primary driver for knowledge.
Incentives play a facilitating role in knowledge processes, in particular intrinsic incentives.	When individuals find engaging in knowledge processes interesting and fulfilling, this intrinsic reward enhances knowledge processes. Incentives are also positive to foster the interaction between the units and to reduce the likelihood of suspicious behaviours that can block knowledge sharing.
Trust facilitates the transfer of knowledge within the organisation and between firms.	Trust alleviates concerns of appropriation and misuse of knowledge by the recipient unit.
Linking roles are essential to foster knowledge-related processes.	Gatekeepers and boundary-spanning individuals are fundamental to link the organisation with the outside environment in order to source valuable knowledge externally and distribute it internally.
Fostering knowledge processes requires the allocation of dedicated resources.	Specific investments and the allocation of resources such as training, and expenditure in R&D, etc. become fundamental to make knowledge processes happen.
Loose organisational structures are preferred to rigid ones for the facilitation of knowledge processes.	Hierarchical structures based on command and control are detrimental to knowledge processes.
Network position, density of the network and the strength of network ties all affect knowledge processes.	Network centrality is positively associated with effective knowledge processes. Knowledge transfer is more likely to occur when firms are embedded in a dense network. Weak ties are useful for the sourcing and transfer of non-complex knowledge. When knowledge is highly complex strong ties are more effective.

Table 4.25. What we know about the user or recipient of knowledge processes.

4.5.6.3. Elements related to the 'user' where the effect on knowledge processes is unclear

In this final subsection, there is an aspect for which the evidence examined in the systematic review is inconclusive: *the role of politics* in fostering or hampering knowledge processes. Power dynamics have recently been recognised as an important factor to understand organisational learning (Lawrence, Mauws et al., 2005). Commentators on the utilisation of social sciences research have long argued that in policy domains the adoption and utilisation of knowledge is primarily affected by both personal and political dimensions. Although the importance of political issues for knowledge and learning processes is unquestioned, the effect of the political factor remains largely unexplored. For knowledge sharing, if individuals perceive that power comes from the knowledge they possess, it is likely to lead to knowledge hoarding instead of sharing (Ipe, 2003). Politics must be managed to obtain the necessary power to influence the decision to search for new knowledge in first instance, and to devote the necessary resources to integrating it, creating knowledge artefacts within the organisation (Gherardi and Nicolini, 2000).

What we do not know	Implications
The role of politics in fostering or hampering knowledge processes is unclear.	Politics influence the decisions of *what* type of knowledge is worth sourcing as well as *how* to source it. Politics may help or obstruct the legitimisation of certain organisational ideas, practices and methods. Finally, the decision to invest in knowledge-enhancing activities may not always be rational but influenced by politics. How all these political processes work has not been explored in depth in the literature.

Table 4.26. What we do not know about the user or recipient of knowledge.

4.6. Summary and discussion of the systematic review

The aim of this section is to briefly summarise key aspects of the enablers and barriers to knowledge processes presented in the thematic synthesis, and to discuss potential avenues for further research.

4.6.1. Descriptive analysis

The descriptive analysis has revealed that only one empirical study (Twomey, Twomey et al., 2000) investigates empirically business schools–industry knowledge transfer. This exploratory study uses a quantitative approach to investigate environmental, institutional, and behavioural factors that affect the inter-organisational transfer and development of knowledge between academic institutions and business. The systematic review has not identified any study of sufficient quality that looks at knowledge transfer between business schools and management consulting firms.

Another interesting insight from the systematic review is the prevalence of quantitative methods across the studies of knowledge and learning. In addition, studies tend to employ single methods of data collection, and the examples of those that use multi-methods are scarce. Only two studies have used more than three methods of data collection. A first implication is that the field would benefit from studies that employed several methods to capture the multifaceted nature of knowledge processes within and across organisations.

The way in which knowledge and learning is operationalised in the literature is also a matter of potential concern. Quantitative research has proved to be useful in linking some knowledge processes with organisational outcomes. However, the way in which both knowledge and learning has been operationalised and measured raises concerns about the extent to which these research designs are capturing the subtle mechanisms by which knowledge is sourced, integrated, used and routinised. Research designs that aim to capture the complex, social and distributed nature of knowledge are needed. Those research designs that emphasise the utilisation of various methods of data collection appear to be particularly appropriate to study knowledge and learning within and across organisations.

The longitudinal nature of knowledge and learning processes has been supported by the findings of the systematic review. This suggests that understanding how knowledge develops over time and exploring this development through sourcing, integration, use and routinisation could be a useful contribution to the literature. This systematic review

has revealed a noticeable scarcity of longitudinal studies. Only three studies are longitudinal investigations. As Easterby-Smith, Graca et al. (2004) suggest, "more work needs to be done on understanding the inner processes of absorptive capacity [and that] it would be most profitable to do this using longitudinal and qualitative methods" (p.23).

The thematic analysis enabled to synthesise four knowledge processes: sourcing, integration, use and routinisation. It has been suggested these processes are intertwined and mutually influential. However, virtually none of the empirical studies address in an integrated and holistic fashion the four knowledge processes. Comprehensiveness and inclusiveness are two aspects overlooked in the literature. Most contributions focus on only few processes leaving the integration of various knowledge processes largely unexplored.

The systematic review revealed that within existing research there is insufficient differentiation of knowledge processes that are logically dissimilar. For instance, studies looking at knowledge transfer seldom investigate processes that are different such as the search for knowledge or the integration of knowledge, making existing findings potentially incomplete (Hansen, Mors et al., 2005).

Another aspect that seems to be overlooked in the literature reviewed is how the type of knowledge affects knowledge transfer and learning outcomes. The literature makes no distinction between, for instance, bio-medical knowledge in the pharmaceutical sector and knowledge about electronics in the semiconductors industry. In the studies reviewed no implications are drawn, for instance, about the differences that may exist between manufacturing and marketing practices. Perhaps the type of knowledge an organisation is engaged with needs to be investigated more thoroughly and linked to other aspects of knowledge and learning. Particularly relevant for this thesis is the absence of empirical evidence about sourcing, integrating, using and routinising management research. Another aspect that has not been sufficiently investigated in the studies included for review is whether the perceived attributes of knowledge are important in facilitating its absorption and use.

4.6.2. Thematic synthesis

The thematic analysis of the 107 studies has provided a rich understanding of both knowledge processes and the barriers and enablers of these processes within and across organisations. It has also revealed some aspects that would be worth discussing in more detail for clarification purposes.

In the context of university–industry relationships, most of the studies in the systematic review are theoretical accounts of the lack of effective transfer of management knowledge between business schools and firms. However, limited empirical evidence exists dimensionalising the causes of this lack of transfer between business schools and organisations and how to reverse this situation.

The thematic analysis indicated that knowledge integration is a complex phenomenon, often difficult to observe and that it may require the use of theories from other fields such as psychology in order to identify and differentiate such processes as

comprehension, interpretation, adaptation, contextualisation, translation and assimilation. In the literature a positive bias is noticed: knowledge is usually viewed positively. It is regarded as a resource to be leveraged or a process to be nurtured more effectively. None of the studies addresses knowledge forgetting instead of knowledge absorption, for instance.

The role of different actors within the firms is also a theme that requires deeper consideration. Organisations are viewed as consisting of structures of tacit meanings both at the operational level but also at the strategic level. Understanding how various individuals understand, use and interpret knowledge is a crucial research question that would benefit from more investigation.

In this thesis, knowledge is conceptualised as a form of action, embedded in social relations and shaped by the language and the categories employed in knowing and understanding the organisation, its purpose and the mechanisms to achieve that purpose. In a sense, organisational action and choices precede knowledge rather than follow it. The implication is that understanding and analysing knowledge processes within and across organisations must be done in the context of action and in the context where action occurs.

The thematic analysis provided very rich data on the key enablers and barriers for knowledge processes within and across organisations. However, a number of aspects that could not be fully clarified would be worth exploring in more depth and these are summarised in Table 4.27 as follows:

Source	Content	User	Process
▪ The extent to which motivational aspects are critical for knowledge transfer ▪ How incentives work in facilitating knowledge processes ▪ The contexts in which trust can be counterproductive ▪ The extent to which cultural differences between the source and the recipient hinder knowledge transfer ▪ When physical proximity is a requirement for effective transfer and when it is not	▪ How the quality of research (or knowledge) affects the degree of utilisation ▪ The circumstances under which it is preferred to source knowledge externally than to search it internally are unclear	▪ The role of politics in fostering or hampering knowledge processes is unclear	▪ The role of conflict in knowledge processes ▪ The extent to which structured mechanisms for knowledge processes are preferred to unstructured mechanisms ▪ The role of time in facilitating knowledge processes

Table 4.27. Summary of gaps in the literature in relation to facilitators and barriers.

There is a need to reconcile approaches that consider knowledge an asset with approaches that regard knowledge as a process. The literature on knowledge and learning is relatively recent compared with other fields of organisational and management studies. There is a recent trend that conceptualises knowledge as the act of knowing, making it difficult to distinguish it from the concept of learning. In the literature there seems to be some confusion over the definition of constructs such as

'organisational learning', 'knowledge creation', 'knowledge transfer' and more recently 'absorptive capacity' and 'knowledge management'.

Beyond labels and clichés, research should aim to provide some clarification about the similarities and differences amongst these constructs. Promising research avenues are those that reconcile open issues, such the balance between absorbing external vs. exploiting internal knowledge (March, 1991a). As Hislop (2003) argued, external knowledge provides only limited understanding to the innovation process. The reconfiguration and integration of internal knowledge is as important as the extent to which external knowledge is utilised.

4.7. Conceptual framework

The aim of this section is to integrate the findings of the review of organisational learning (OL) (chapter 3) and the systematic review in this chapter into a conceptual framework. This conceptual framework will be used to guide the empirical work of the thesis. Figure 4.7 shows the conceptual framework for exploring the enablers and barriers to learning and knowledge processes. In this framework learning and knowledge processes appear in the centre, influenced by a set of enablers and barriers.
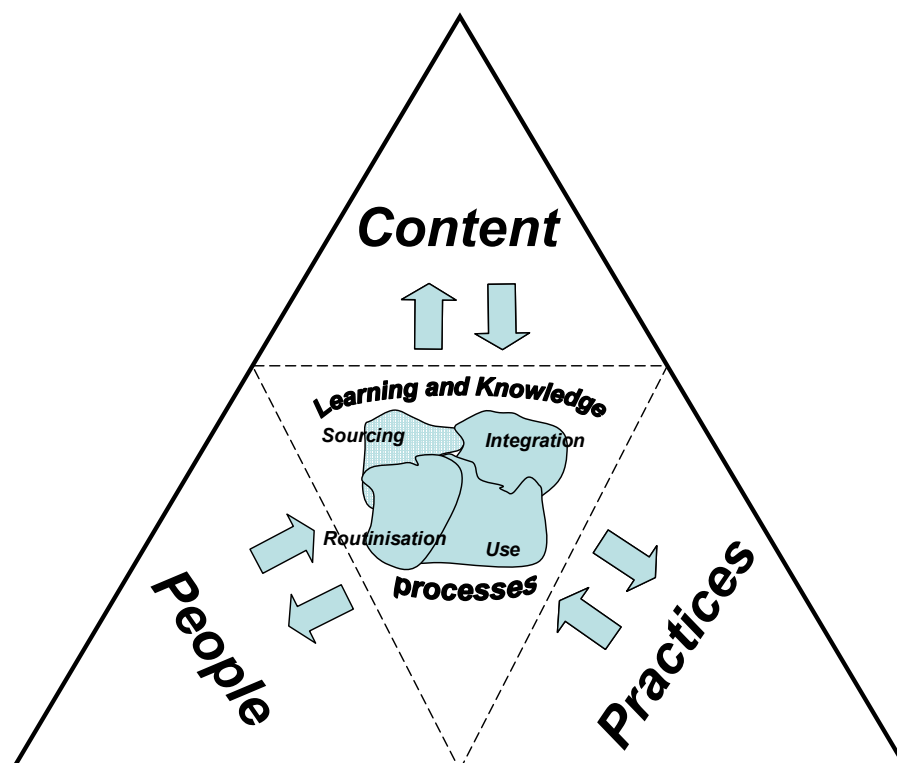
Figure 4.7 Conceptual framework for the study of enablers and barriers to knowledge and learning processes. Source: compiled by author.

The framework is derived from the findings of the systematic review. However, the source and user have been integrated into a new category labelled 'people'. In the context where this framework is used, the collaboration between MCompany and Cranfield and the MCCentre, a clear separation between source and user does not exist. In fact the co-production approach to management knowledge (Tranfield, Denyer et al., 2004b) aims to blur the divide to facilitate the knowledge and learning processes.

4.8. Research questions

The results of the findings from the review of OL (chapter 3) and the systematic review, will now inform the empirical part of this thesis. The overall purpose of the thesis is to understand the differences across the five research projects conducted at the MCCentre.

This aim is approached by gaining a deep understanding of the learning and knowledge processes between Cranfield School of Management and MCompany and the enablers and barriers to these processes.

This purpose is detailed in the following research questions:

- What are the key learning and knowledge processes in the academic–management consulting research programme?

- What are the enablers and barriers to these learning and knowledge processes?

Informed by the findings from the systematic review, this thesis will, specifically, address the following questions:

(1) Knowledge processes

- What are the key processes in sourcing externally-generated knowledge?
- How is new knowledge integrated into the consulting organisation's existing knowledge base?
- How is knowledge used within the consulting organisation?
- How, if at all, does new knowledge become part of the routines of the organisation?

(2) Enablers and barriers of knowledge processes

- What are the perceived attributes of the content of management ideas and research evidence as perceived by consultants? And how does this affect learning and knowledge processes?
- What are the practices undertaken in each of the research projects that may facilitate or hinder learning and knowledge?
- To what extent does the nature of relationships among people facilitate/hinder knowledge processes?

The next chapter will detail the research design to address these questions.

5. METHODOLOGY AND EMPIRICAL DATA SET

5.1. Introduction

This chapter outlines the main traditions in research philosophy, positioning this thesis within a realist philosophy. The research design consists of an in-depth, longitudinal single case study with five embedded units of analysis, using multiple methods of data collection. This research design is proposed as an appropriate method given the complex, multi-level and evolving nature of learning and knowledge processes under examination. Four methods of data collection are used: participant observation, semi-structured interviews, repertory grids and document analysis. These methods are described in detail in this chapter.

5.2. Research questions

In conducting management research, Easterby-Smith, Thorpe, et al. (2002) suggest that it is important to clearly define the objectives of the study before selecting the methods of data collection to be used. The overall purpose of this study is to understand why the five research projects conducted in the MC Centre achieved such disparate outcomes in terms of learning and knowledge. This purpose is divided into two key research questions:

- What are the key learning and knowledge processes in an academic–management consulting research programme?

- What are the enablers and barriers to these learning and knowledge processes?

Each of the principal research questions has a number of specific sub-questions that are derived from the systematic review (chapter 4):

(1) Knowledge processes

- What are the key processes in sourcing externally generated knowledge?

- How is new knowledge integrated into the consulting organisation's existing knowledge base?

- How is knowledge used within the organisation?

- How, if at all, does new knowledge become part of the routines of the organisation?

(2) Enablers and barriers of knowledge processes

- What are the perceived attributes of the 'content' of management ideas and research evidence as perceived by consultants? And how does this affect learning and knowledge processes?

- What are the 'practices' undertaken in each of the research projects that may facilitate or hinder learning and knowledge?

- To what extent does the nature of human relationships facilitate/hinder knowledge processes?

5.3. Philosophical foundations

The following subsection explores the philosophical position of this thesis addressing the underpinning ontological assumptions and the epistemological position that guides the research. In so doing, it first outlines classical ontological approaches in social science research – positivism, constructivism and realism – and describes the stance adopted in this study.

Research philosophy comprises three key aspects: ontology, epistemology and methodology. Ontology is the conception or view of the nature of reality that a particular approach of social inquiry takes. Epistemology is the theory of knowledge, in other words, the ways in which it is possible to gain knowledge of this reality and the criteria that must be satisfied in order for it to be termed 'knowledge'. Finally, methodology is the analysis of how research proceeds, particularly looking at how theories are generated and tested and focusing on the methods used to study reality (Blaikie, 1993).

The importance of philosophy in social research has long been recognised (Blaikie, 2000; Denzin and Lincoln, 1998; Easterby-Smith, Thorpe et al., 2002). A clear statement of philosophy informs the research design clarifying the nature of the evidence sought and the means of collecting and interpreting data. An appropriate philosophical choice is important, as this helps the researcher select suitable methods to study particular research problems (Bryman, 1988). The identification of the philosophical foundations of a particular research project helps the researcher position his or her work within a research tradition and an intellectual community. Ultimately,

> empirical social science must start from a properly articulated philosophical base if it is to be successful. The philosophy of social science cannot be an optional activity for those reluctant to get on with the 'real' empirical work. It is the indispensable starting-point for all social science. (Trigg, 1985 p.189).

In addition to understanding the philosophical assumptions that underpin approaches to research it is also necessary for researchers to examine their own philosophical beliefs and their assumptions about reality (Blaikie, 1993; Easterby-Smith, Thorpe et al., 2002). Three key ontological positions have traditionally been the subject of debate: positivism, social constructionism and realism. These are described below.

5.3.1. Ontological assumptions

A key ontological question is whether social reality is constructed within individuals' minds, or whether reality is external and objective. A clear definition of reality is important to conceptualise and differentiate (if appropriate) the natural and the social world. The differences between the natural and the social sciences have been debated for many years by philosophers such as Popper (1959). Authors generally present ontological choices within a continuum based around the two poles of positivism and social constructionism, with intermediate positions such as realism (Blaikie, 1993).

Positivists assume that knowledge is universal and exists external to the individual. The emphasis is the objective measurement of facts that can lead to the creation and testing of general laws (Easterby-Smith, Thorpe et al., 2002). Real knowledge is formed by observed facts and tangible reality that can be fragmented into independent and dependent variables from which relations of causality can be inferred. Easterby-Smith, Thorpe, et al (2002 p. 28) summarise the key characteristic of positivism as one where the observer is independent from what is being observed and from the choice of what to study. Therefore, decisions on how to study a phenomenon can be determined by objective criteria rather than by human beliefs and judgments. Positivists aim to identify causal explanations and fundamental laws by developing and testing hypotheses. Since concepts need to be operationalised in a way which enables facts to be measured, positivists frequently reduce phenomena to the simplest possible elements.

Social constructionism is an opposing position to posititivism. The ontological assumption is that the world is an entity "which is interpreted by the meanings which participants produce and reproduce as a necessary part of their everyday activities together" (Blaikie, 1993 p. 48). Since reality is socially constructed, it can never be 'observed' only 'experienced'. Comprehending the interactions of people should then be the purpose of social science (Weber, 1949). Thus, for social constructionists it is not possible to produce objective descriptions of reality. Reality is constructed through social processes by continuous negotiation of meaning in which the interactions among individuals shape how knowledge is constructed. This knowledge is historically and culturally-specific, and thus dependent upon the particular social and economic context in which it is generated. Berger and Luckmann (1967) argue that knowledge is a phenomenon that results from the experience of specific social contexts, and differs from individual to individual, thus the sociology of knowledge must be concerned with the analysis of the social construction of reality.

Realism is a contemporary ontology that sits between the pure positivist and the constructionist views of reality. Realists claim that for the social sciences to be scientific they must adopt the principles of the natural sciences. However, realists adopt an anti-positivist position, arguing that there are fundamental differences between natural and social phenomena. Realists accept "the interpretive view that social reality is pre-interpreted, that society is both produced and reproduced by its members and is therefore both a condition and an outcome of their activity" (Blaikie, 1993 p. 59). There are two major strands of realism in the social sciences: on the one hand transcendental and critical realism (Bhaskar, 1978; Sayer, 1992) and on the other constructivist realism (Harré, 1970; Harré and Secord, 1972). The aim of constructivist realist science according to Harré & Secord (1972 cited in Blaikie 1993, p.60) is,

> to produce critical descriptions of non random events by 'exploration' and by 'experiment' to check critically the authenticity of what is thought to be known. In carrying out exploration, a scientist may have some idea about the direction in which to go but no very clear idea of what to expect.

Critical realists such as Bhaskar (1975) claim that reality exists independently of our representation of it. Society is not a social creation because society pre-exists the individual, so it is through social interaction that reality is reproduced, and may be transformed. For critical realists there is a difference between 'causal laws' and 'patterns of events' (Bhaskar, 1978). Realism is concerned with identifying an explanation of the links between events, structures, tendencies, powers that things have to act in a particular way; realism is ultimately a search for generative mechanisms (Blaikie 1993). Bhaskar works on the assumptions that mechanisms are independent of the events they generate and that events can occur independently of them being experienced. According to Bhaskar, events and mechanisms constitute three overlapping domains of reality: the empirical, the actual and the real. The empirical domain consists of events which can be observed. The actual domain consists of events whether or not they are observed. The real domain consists of the structures and mechanisms which generate these events.

Tsang and Kwan (1999) summarise three basic contentions of realism. First, the realists are concerned with the structures and mechanisms of the world rather than simply with empirical events. Second, these structures and mechanisms are only contingently related to observable empirical events. Third, although scientific knowledge of reality, especially social reality, is never infallible, it is still possible to acquire such knowledge through creative construction and critical testing of theories (Tsang and Kwan, 1999 p.762).

5.3.2. Chosen research philosophy

The phenomenon being studied in this thesis (enablers and barriers to learning and knowledge processes in an academic–management consulting research programme) fits well within the realist ontology. It is argued that objective and subjective phenomena occur in the academic–consulting research programme being studied. For instance, objective events such as meetings and workshops can be observed and there is documentary evidence of them in agendas, minutes and field notes (the empirical). At the same time, there are underlying structures that occur whether or not they are observed.

For realists, social reality is viewed as a socially constructed world which is the product of the cognitive structures social actors bring to it, or material but unobservable structures of relations. The aim of realist science is then to explain unobservable phenomena in relation to underlying structures and mechanisms and it is concerned with building models of these mechanisms that may reveal the nature of the phenomena being studied (Blaikie, 1993 p.98). A conceptual framework is used to guide the research addressing the elements of practices, content and people with the aim of constructing a model of key enablers and barriers to learning and knowledge.

This research takes a critical realist approach to the conceptualisation of learning and knowledge. It recognises that knowledge has an empirical nature in observable aspects

such as ideas, frameworks, management practices and tools. This study also acknowledges the existence of knowledge at an 'actual' level: cognitive structures, individuals' perceptions, sense-making processes are all aspects of knowledge processes that occur within and across organisations whether or not they are observed. Finally, this research accepts that certain mechanisms that pertain to the 'real', such as power and politics, individuals' motivations, incentives and social interactions affect learning and knowledge processes.

Following a realist paradigm, the role of the researcher is to uncover the reality under investigation, which given the nature of the research projects in the MC Centre, will require the use of different methods. Through these methods the research will attempt to discover unobservable phenomena through the subjective accounts of social actors and by uncovering underpinning tendencies or mechanisms (Blaikie, 2000). A balanced blend of retroductive and abductive strategies is taken. Retroduction refers chiefly to the process of building models of structures and mechanisms and abduction refers to the processes by which theories are constructed. According to Blaikie (1993 p.162), "deficiencies in the Inductive and Deductive research strategies has led to the development (or perhaps reclaiming) of two alternative strategies, Retroduction and Abduction, which are based on cyclical or spiral processes rather than linear logic" (capital letters in original). These approaches are now explored in more detail.

Sitting between a purely inductive approach (i.e. use data to construct theory) and a deductive approach (i.e. use theoretical hypothesis or propositions to be tested later), the *retroductive research strategy* "involves the construction of hypothetical models as a way of uncovering the real structures and the mechanisms which are assumed to produce empirical phenomena" (Blaikie, 1993 p.168). This process of model building to elicit generative mechanisms involves iterations of description, explanation and redescription. These three processes are the fundamentals of critical realist science (Bhaskar, 1978).

Retroductive research strategies are summarised by Blaikie (1993 p.170) as: first, the attempt to discover appropriate structures and mechanisms to explain observable phenomena; second the construction of models to compensate the unobservability of mechanisms; third, the testing the model as a hypothetical description of entities and their relationships; and fourth, the development and use of suitable instruments to obtain more direct confirmation of these existential claims.

This thesis is retroductive in the sense that a theoretically-informed conceptualisation of learning and knowledge processes, and a conceptual framework, is developed through a systematic review of the literature. Then, this model is used to help explain knowledge processes within and across organisations and finally, the empirical data from a novel case study is combined with the literature-based dataset to produce a theoretically-informed and empirically-grounded conceptualisation of knowledge processes and underlying generative mechanisms (enablers and barriers).

Abductive research strategy is frequently used by critical realists "to produce social scientific accounts of social life by drawing on the concepts and meanings used by social actors, and the activities in which they engage". Following this view, the role of the researcher is "to discover why people do what they do by uncovering the largely

tacit, mutual knowledge, the symbolic meanings, intentions and rules, which provide the orientations for their actions" (Blaikie 1993 p. 176). For this approach both taken-for-granted beliefs and daily actions and routines are the elements to be gathered and analysed to gain an understanding of the phenomena under study through social actors' own accounts.

In this thesis, instances of social interaction and social episodes, and their role in knowledge processes, are investigated, meanings and perceptions gathered, and critical incidents and activities in which they engage are observed and analysed.

5.4. Research design

The purpose of this thesis is exploratory in nature, and aims to understand learning and knowledge processes in a very specific setting (management school–management consulting collaborations). This study also seeks to gain an understanding of the elements that might facilitate or hinder learning and knowledge processes in that setting. The phenomenon this thesis aims to address has a dual nature: relatively objective and notably subjective. At the objective end, there are actions, practices and routines. At the other end there are interpretations, perceptions, and constructions that underpin the internalisation of learning and knowledge. The research design is devised to address the dual nature of learning and knowledge.

5.4.1. Methodological options: quantitative vs. qualitative

Two broad methodological options are available to the researcher: quantitative and qualitative. The systematic review (see chapter 4) reveals that quantitative approaches using surveys dominate the field of organisational learning and knowledge. It also shows that case study is the method most commonly used in qualitative research. In particular, 38 empirical studies contained in the review used survey questionnaires vs. 18 studies that employed case study methods.

Quantitative approaches to management research are very much dominated by surveys which normally use questionnaires as the main method to collect data. For Blaikie (2000), although surveys may try to capture both phenomenon and context, their ability to investigate context is limited. Survey research encompasses measurement procedures that involve asking questions to respondents and can be appropriate in certain conditions (Robson, 2002). These conditions are, among others, clearly defined and tightly operationalised variables, with little emphasis on the context. The systematic review revealed that the operationalisation and measurement of learning and knowledge is a matter of concern. Existing quantitative research designs may not capture the subtle mechanisms by which knowledge is integrated and used. In relation to the context, this thesis is concerned with learning and knowledge processes within a very specific context – academic–consulting relationships – which means that surveys are not the most appropriate method.

On the contrary, qualitative approaches are appropriate when context is judged to be relevant and when actors' accounts are important. Mason (1996 p.4) argues that qualitative methods can be described as those that are grounded in a philosophical position which is broadly interpretivist and are concerned with how the social world is

interpreted, understood, experienced or produced. Qualitative research is often based on techniques of data collection which are flexible and sensitive to the social context in which data is produced, and based on methods of analysis and explanation-building which involve understanding of complexity, detail and context (Lincoln and Guba, 2000).

The context of this study is a complex one. It involves two organisations, MCompany and Cranfield, a jointly-managed research centre, individuals from both organisations with different backgrounds, and a declared purpose to create 'thought leadership' using as the vehicle five research projects. Methods are required that can deal with the complexity of learning and knowledge processes and their enablers and barriers. As such, a qualitative methodology is used to address the objectives of the thesis.

5.4.2. Case studies

Within qualitative approaches, case studies are an appropriate research design to conduct investigations that attempt to develop an understanding of processes and dynamics as they occur in their context or setting and specifically when "the boundaries between phenomenon and context are not clearly evident" (Yin, 2003 p.13). Case studies are particularly well suited to address 'how' questions by exploring the interactions of phenomena and their context (Hartley, 2004). Case studies can be used to explain a wide range of phenomena providing detailed descriptions of these, either to test theory, or as a theory building device (Eisenhardt, 1989).

There are two broad types of case study designs: single and multiple. Within each case study there can also be single or multiple units of analysis. Yin (2003) refers to cases with a single unit of analysis as 'holistic' and labels those that have multiple units of analysis 'embedded'. Single case studies with embedded units are used when attention is given to multiple units or subunits. A classical example may be evaluation research where the single case can be a public programme that involves a number of projects that act as multiple units of analysis. This thesis explores five research projects (embedded units) that are part of the wider research programme of the MC Centre (the case).

Case studies can be also classified into 'intrinsic', 'instrumental' and 'collective'. 'Intrinsic' cases are those in which the researcher has a specific interest in understanding a particular phenomenon. Researchers select intrinsic cases to study because they are particularly interesting, not because they represent other cases. Instrumental cases are normally investigated to provide insight into an issue or to draw generalisations, thus the case study is a vehicle to understand a phenomenon beyond the original context.

*Single case stud*ies are used when there is a need to develop a deep, rich understanding of context. Single case study has long been recognised as an appropriate strategy in social sciences, particularly in Sociology (Gomm, Hammersley et al., 2000) and Psychology (Bromley, 1986). In management research, single case studies are a recognised method of inquiry. For instance, two Academy of Management Journal best article award winners (Isabella, 1990; Wall, Kemp et al., 1986) used a single organisation to investigate how managers construe key organisational events, and

autonomous groups respectively. Likewise, Pettigrew's (Pettigrew, 1985) study of continuity and change was a single case conducted in one organisation.

Yin argues that single case studies are "eminently justifiable under certain conditions" (Yin, 2003 p.46). These conditions are, firstly, when a case that represents a critical one in testing a well-formulated theory, where this theory has specified the propositions and the circumstances within which the propositions are believed to be true. The second criteria is the uniqueness of the case. If the phenomenon under investigation represents an exceptional or extraordinary case, then the single case approach is defensible. The third criterion refers to a case that is representative of many others, so by studying one case, insights can be applicable to the rest. Fourthly, single case study is also justified when a researcher has an opportunity to investigate a phenomenon that has been previous inaccessible, what Yin calls 'revelatory'. Finally, when the aims of the research are to understand how certain conditions change over time, observing the development of events at various points in time, then single case is an appropriate research strategy (Yin, 2003).

To investigate learning and knowledge processes and their enablers and barriers between researchers and management consultants, and in order to take into account the context-specific, uniqueness, revelatory and time-dependant nature of these phenomena, a single, in-depth longitudinal case study approach with embedded units using multiple methods is chosen. The subsection below explains this approach and provides a justification for this choice.

5.4.3. Criteria for the case study and justification of the single case study approach

Once the research questions have been clarified, and having chosen the research strategy, a researcher has the issue of how to select the case study organisation. Hartley (2004) presents several key questions to be asked: What kind of organisation is the researcher looking for? Is it intended to be typical of the phenomenon to be studied, or is it an extreme example? Has the researcher the resources and interest in undertaking more than one case? The aim of these questions is to help the investigator be clear about what kind of organisation would fit the criteria for the research. The profile of the research setting in terms of process, context and purpose, content, depth of analysis and time frames required to answer the research questions is described below.

Research context and purpose

This study is concerned with the application and use of academic management research in management practice. The research setting must be one where the purpose is to facilitate the adoption and use of management research in practice. There is agreement that the use of management research is facilitated by collaborative approaches between academics and practitioners. Thus, an appropriate research context would be one where collaborative approaches to research are adopted, such as evidence-informed practice (Tranfield, Denyer et al., 2003) and co-production of management knowledge (Tranfield, Denyer et al., 2004b). Other mechanisms where practitioners and researchers work together are practice-based evidence (Fox, 2003), co-research (Hartley and Benington, 2000), academic-practitioner partnerships (Bartunek, 2002), cooperative

R&D (Kastelli, Caloghirou et al., 2004), and academic-practitioner collaboration (Amabile, Patterson et al., 2001). The case study explored in this thesis (the MC Centre and the five research projects) is an exemplar of evidence-informed practice using systematic review in the management field that emphasises the co-production of knowledge; thus, it provides an appropriate context for conducting the study. An overview of the evidence-informed approach to management knowledge has been described in chapter 2 (section 4), analysed in chapters 6 and 7, and discussed in chapter 9 (section 3).

Content

The type of knowledge must be management research which is the phenomenon of interest. The output of this research can take the form of management ideas, practices, methods, or frameworks. The five projects investigated in this thesis – High Reliability Organisation design (HRO), Public-Private Partnerships (PPP), Asset Management, Private Finance Initiative (PFI) and Business Transformation (BussT) – all fit within the broad category of management/organisational issues, thus fit the requirement for the thesis.

Depth of analysis

An in-depth approach is required in order to study learning and knowledge processes and their enablers and barriers in the research projects. Learning and knowledge processes are often subtle, tightly linked to the specific configuration of the project and are dependent on the circumstances that surround a particular collaboration. Some of the enablers and barriers to learning and knowledge that this thesis aims to explore can only be studied if the researcher immerses deeply into the organisational context within which they occur.

The case this thesis investigates is what Yin (2003) calls a 'revelatory case'. Revelatory cases occur when "an investigator has an opportunity to observe and analyse a phenomenon previously inaccessible to scientific investigation" (p. 42). The author of this thesis was closely involved in all research projects having exceptional access to the consulting firm for the duration of the study (2001-2006). In addition, he was employed as a researcher in a Research Council funded project in which MCompany participated as the prime industry collaborator for a two-year period (March 2003–April 2005). In his role of researcher the author enjoyed an extraordinary opportunity to investigate knowledge processes in depth.

Multiple methods will be used in this study to gain in-depth understanding and to answer the research questions of this thesis. The nature of the enablers and barriers to be explored is varied, requiring the use of multiple methods of data collection and analysis. This is explained in section 5.5.

Time frames

Longitudinal studies have a long and established tradition in the management field, and are well-suited to understanding the dynamics of innovations (Van de Ven, Angle et al., 2000), strategy (Marginson, 2002), knowledge assimilation (Van den Bosch, Volberda

et al., 1999), learning and change (Argyris, 1985) and organisational learning (Stevens and Dimitriadisb, 2004). It could be argued that research projects can only be fully understood if they are analysed from their inception, through the engagement in learning and knowledge opportunities and internalisation. In addition, a comprehensive analysis of learning and knowledge processes needs to cover sufficiently long periods of time to be able to gather some evidence on their realisation and potential routinisation. A longitudinal perspective is adopted in this thesis which was facilitated by extensive access to the research setting. All five projects within this case study were investigated, and the author was personally involved through the five-year period (October 2001– September 2006).

5.4.4. Level of analysis

Case studies make possible multiple *levels of analysis* (Yin, 2003) depending on the purpose of the research. Bernard (1995 p.37) recommends that "no matter what you are studying, always collect data on the lowest level unit of analysis possible […] you can always aggregate data collected on individuals, but you can never disaggregate data collected on groups". This suggests considering individuals as a first level of analysis, since individual-based data can later be aggregated into a group or organisation-wide account. Individuals act and react in social environments influencing and being influenced by the group and organisation within which they operate, which calls for the consideration of individuals and their wider contexts (group and organisation).

Within the organisational learning and knowledge academic community there is an increasing advocacy for the adoption of holistic approaches that consider macro-institutional contexts (Gnyawali and Stewart, 2003; Robertson, Scarbrough et al., 2003) as well as micro-organisational conditions (Zietsma, Winn et al., 2002). There is also a growing agreement that learning and knowledge are multi-level phenomena (Argote, McEvily et al., 2003; Crossan, Lane et al., 1999) that can occur at the level of networks of organisations (Knight and Pye, 2005), organisations (Werr and Stjernberg, 2003), networks of individuals (Hansen, Mors et al., 2005), groups (Bogenrieder and Nooteboom, 2004), communities of practice (Wenger, 1998), and all these levels linked to the individual (Cohen, 1991). In this thesis, a multi-level of analysis is adopted, recognising that the individual, group, and organisation are all involved in learning and knowledge processes. Enablers and barriers to learning and knowledge can be located at any of these levels. Therefore, the individual, group, and organisation are considered as relevant levels of analysis.

5.4.5. Unit of analysis

Defining the unit of analysis poses a major challenge for researchers. The unit of analysis can be as varied as the research question under study. Yin (2003 p.23) argues that, "your tentative definition of the unit of analysis (and therefore of the case) is related to the way you have defined your initial research questions", thus, clarification of the unit of analysis is very important. The initial purpose for the study was to understand the differences across the five research projects of the MC Centre, which suggests taking the project as a unit of analysis. Case studies are often layered; for instance, a single programme may be a case study in which several units participate. This enables the cross-case analysis of the individual cases (see section 5.6) that

becomes part of the programme case study (Patton, 2002). This thesis is an example where five research projects are embedded in a wider research programme (the one of the MC Centre). Therefore, the unit of analysis of this thesis is the *research project.*

5.4.6. Sources of data

Three main sources of data are used in the research: informants, events and episodes, and documents. Both MCompany and Cranfield staff involved in the research projects are included to increase the depth of understanding. Informants will be selected taking into account two criteria: they must have knowledge of the phenomenon under study, and they must be able and willing to collaborate in the research. The actors' subjective accounts are used to help gain an understanding of their perceptions and motives. The aim is to analyse this data to try and uncover the tendencies and generative mechanisms that underpin learning and knowledge processes and their enablers and barriers.

The second main source of data collection is social episodes or events, such as meetings, presentations, workshops and client dinners. Project meetings are the context where the purpose and direction for the projects will be set, and emerging research findings presented. Workshops and client dinners are the occasions where research is disseminated to wider audiences.

The last source of data collection is documents, particularly project outputs. Presentations, reports, press releases, position papers, letters and memoranda are all repositories in which ideas and useful information are kept. A retrospective analysis of documents helps identify the development of ideas over time. It also enables the identification of key messages perceived by the authors.

5.5. Methods of data collection and analysis

The aim of this section is to specify how data will be collected and analysed and also to report details of the dataset actually gathered. Firstly, the methods of data collection are briefly described. This is followed by a description of how that data will be analysed.

5.5.1. Participant observation

5.5.1.1. Description of the method and data collection

Participant observation allows the researchers to study first-hand the behaviour of individuals in their workplace. The interaction with participants allows the researcher to learn to understand the experiences and interpretations of actors (Taylor and Bogdan, 1984). Participant observation is concerned with "the experience of people, the way they think, feel and act. The most truthful, reliable, complete and simple way of getting that information is to share their experience" (Douglas, 1974 p.112). A key distinguishing feature of participant observation is that the observer's own experience is considered an important and legitimate source of data (Brewer, 2000).

There are four possible ways of engaging with the setting (Burgess, 1984): (1) as a complete participant, whereby the researcher conceals their intentions to observe. (2) the participant-as-observer, where the researcher is integrated in the setting and makes explicit their role as observer. (3) the observer-as-participant, where the researcher

maintains minimal contacts with the people being studied, (4) the complete observer, who merely stands back and watches events and courses of action. In this thesis, the author adopts the role of participant-as-observer and openly communicated an intention to gather data for research purposes, whilst also actively contributing to the research programme.

Participant observation requires negotiated access, as the researcher is likely to be in contact with sensitive information. According to Brewer (2000), once access has been granted, the researcher must focus on projecting a positive image of himself/herself and on building close relationships but at the same time maintaining a professional distance (Brewer, 2000). For this research, access was secured to both the research team and the consulting firm. The observer was employed over the period of two years as a researcher, having an in-depth and immediate access to most aspects of the development of the project. Data collection, in participant observation, requires comprehensiveness and self-discipline in order to develop detailed descriptions of people, events and conversations as well as the observer's actions, feelings, and working hypotheses. These events should ideally be noted as precisely as possible (Taylor and Bogdan, 1984).

One of the typical criticisms of participant observation is that people are likely to behave differently in the presence of the researcher, although this situation tends to disappear over time. Participant observation, like other qualitative methods has also been argued to be a research method that is subject to researchers' bias due to selective perception (Friedrichs and Lüdtke, 1975). This bias can be reduced by training the observer or becoming familiar with the method. Waddington (2004) argues that bias is inevitable in social research and can be beneficial to the study. The benefits to be gained from observation far outweigh any practical problems likely to be encountered. Participant observation enables assessing the consistency of people's statements and behaviours at different times (Waddington, 2004 p.162).

In this study, project meetings, presentations, events with clients, internal development workshops, personal discussions, etc. are observed. A record of each event is produced including aspects such as place, actors and activities. Place is normally the venue, actors are attendants to the meetings and activities are captured in both the agenda and the minutes. In addition, *condensed notes* (Spradley, 1980) in each of these events are taken. These notes include: sentences, words, actions, sequences of activities, expressed emotions, aspects of group dynamics (such as frequency of participation) and summaries of discussions. The observation notes are then enriched with *expanded notes* (Spradley, 1980). Expanded notes are written after the observation and are aided in this study by listening to the tape-recordings of the sessions. Permission to tape record project meetings is requested before use in all cases.

5.5.1.2. *Analysis of field notes*

The analysis of the data in this case involved a dialectical procedure and 'analytic induction' (Burns, 2000). In this process,

> data are dissembled into elements and components; these materials are examined for patterns and relationships, sometimes in connection to ideas derived from literature. With an idea in hand, the data are reassembled, providing an interpretation or

> explanation of a question or particular problem; this synthesis is then evaluated and critically examined; it may be accepted or rejected entirely (Jorgensen, 1989 p.110-111).

Field notes are imported into the computer-assisted quantitative data analysis (CAQDA) package Nvivo (Gibbs, 2002; Richards, 1999). Nvivo is used to classify the emerging patterns from the data into meaningful categories. Participant observation in this study, although sharing methodological aspects with ethnographic research (Brewer, 2000; Spradley, 1979) is not aimed at providing detail cultural descriptions. On the contrary, significant instances of sentences, words, actions, sequences of activities, expressed emotions and aspects of group dynamics will be organised to provide a basis for data triangulation (Denzin, 1978; Easterby-Smith, Thorpe et al., 2002; Spradley, 1979; Yin, 2003).

Overall, participant observation facilitates a detailed understanding of the environment and of the agents in study and enables the researcher to contextualise actions and behaviours in a manner that arguably no other research method can (Spradley, 1980).

5.5.1.3. *Results of participant observation*

As described in the previous chapter, participant observation allows the researcher to study first-hand the behaviour of individuals in particular contexts. The researcher was closely involved in all the activities and initiatives of the centre from October 2001 (the MC Centre had been officially launched in September 2001) to its closure in October 2004. This involvement was particularly intense during the period March 2003–April 2005 when he was appointed the researcher for a Research Council's funded research grant. This grant, as described in chapter 2, provided funding and resources to conduct the five research projects that this thesis analyses. In total, the researcher was involved in the research setting during a 5-year period (October 2001–September 2006).

Participant observation was conducted in a total of 43 project and steering group meetings, four internal workshops, seven events with clients and a number of informal interactions. From these observations, field notes were produced and added to the archival data set to form a comprehensive and detailed case study database of the MCompany–Cranfield collaboration. In addition, project meetings were recorded with the permission of participants, resulting in more than 41 hours of recordings. The recording of the meetings enabled the capture of rich information about interactions, discussions, and dynamics within each project. The audio material was used to supplement the field notes taken.

Participant observation was instrumental in comprehending the context that surrounded specific events and occurrences. In particular, participant observation was key in understanding issues related to people and practices that otherwise would not be captured by any other methods of data collection. Overall, participant observation provided an exceptional opportunity to perceive reality from the viewpoint of someone inside the organisation and such a perspective is "invaluable in producing an 'accurate' portrayal of a case study phenomenon" (Yin, 2003 p. 94).

Source of data	Number
Meetings	Total: 43
Steering group	11 (+ documentation from four previous meetings)
Project 1. HRO	9
Project 2. PPP	15
Project 3. AssM	6
Project 4. PFI	2
Internal workshops	4
External presentations and events with clients	7
Hours of recording	41

Table 5.1 Sources of data for participant observation. Source: Compiled by author

Participant observation, as with many other forms of scientific enquiry, depends on artful judgements, decisions and skills (Jorgensen, 1989 p.8) which are not exempt from potential bias. On occasions participant observers may need to assume positions of advocacy or may find it difficult to take notes or just be physically present in every potentially relevant situation (Yin, 2003). In these cases, a variety of methodological techniques protect the qualitative data from researcher bias (Silverman, 1985). Throughout the course of the study I made every effort to collect all the relevant data generated. In the five-year period, I only missed two steering group meetings and two project meetings, and in all cases meeting notes were gathered later. In order to facilitate comprehensive note taking, all project meetings were tape-recorded and listened to again after the event to supplement the field notes.

5.5.2. Semi-structured interviews

5.5.2.1. Description of the method and data collection

Interviews are the most common method of data gathering in qualitative research since it is a flexible method and is well-suited to a wide range of research designs. In particular, interviews are "particularly suited for studying people's understanding of the meanings in their lived world, describing their experiences and self-understanding, and clarifying and elaborating their own perspective on their lived world" (Kvale, 1996 p.105). As in many other qualitative research methods, interviews are used to help the researcher see the research topic from the perspective of the interviewee and to understand how and why they have that particular perspective. In order to gather these accounts, interviews often have a low degree of structure (King, 2004).

There are three broad types of interview, which are related to their underpinning epistemological positions: realist interviews, phenomenological interviews and social constructionist interviews. Realist interviews assume that the accounts participants produce in interviews have a direct relationship to their 'real' experiences in the world. Thus, interviewee's statements are treated as providing insight into their psychological and social/organisational lives outside the interview situation. In realist interviews, accuracy of statements is important, as well as comparability of findings with other research methods (Madill, Jordan et al., 2000). Lastly, social constructionist interviews view language not just as a description of the external social world and people's internal states, but as the construction of them through discourse in interaction. In coherence with the epistemological position of this thesis, interviews will be considered realist interviews.

Interviews allow researchers to ask quite focused questions to address very specific issues. Another advantage is that people tend to accept interviews readily as they often like talking about their work. On the other hand, conducting interviews may be time-consuming as they create such a huge volume of data which could eventually result in overload (King, 2004).

Whilst the interviews employed in this study are semi-structured, they will be followed by probes to explore the interviewees' views and experiences in more depth. The interviews will also allow some degree of flexibility to accommodate interesting comments and leads.

5.5.2.2. *Analysis of the interview data*

As a large proportion of the empirical data of this thesis is in verbal and written forms, it is important to use a systematic method to make inferences from the text. This is accomplished through coding, where themes emerging from the data are identified and analysed consistently (Blaikie, 2000).

The interviews undertaken in this study are fully transcribed and are imported into the qualitative analysis package Nvivo (Gibbs, 2002; Richards, 1999). The use of computer-assisted quantitative data analysis (CAQDAS) has a number of advantages for qualitative research. The CAQDAS software helps the researcher manage large sets of rich data and provides a simple sorting process from which patterns can be categorised. Codes of texts can be easily amended and text units can be linked to form coding structures. The use of software facilitates an audit trail of the analysis and adds reliability and consistency to the process (Lincoln and Guba, 2000).

An inductive content analysis approach (Patton, 2002) is adopted whereby themes are allowed to emerge without pre-imposing a coding structure. Portions of interview text identified as representing relevant concepts are coded and labelled, and often kept as 'free nodes', that is, separated from any emerging conceptual structure or hierarchy. Through an iterative process, emerging themes are tentatively organised into higher order categories. As new text is coded, earlier categories are removed, revised, retained, and constantly developed into clustered themes. Through an iterative process, emerging themes were continuously organised into higher order categories. A total of 477 themes emerged from the data. These were further grouped into 72 higher order categories and further into 17 dimensions and subsequently into four high level groups (See Appendix D for an example of coding).

Two researchers, one familiar with the research project and one independent of it, reviewed the coding structure in order to enhance its reliability. Comments were sought to detect instances of inconsistency and where found, they were corrected. Both researchers agreed the coding structure was well-founded, logical and suitable for the aims of this study. This procedure, although it cannot be considered a systematic assessment of inter-coder reliability (Neuendorf, 2002), is thought to have added a reasonable amount of rigour to the coding process. Given the enormous amount of text, it was not feasible to ask independent researchers to code all of the data for the purposes of calculating inter-coder reliability figures.

5.5.2.3. Results of semi-structured interviews

Interviews were designed to address the aims of the study. The conceptual framework derived from the systematic review was used to provide some an interview structure. The interviews explored learning and knowledge processes and actors' perceptions of the facilitators and barriers to these processes, including the elements: people (from both Cranfield and MCompany), content and practices. A semi-structured approach was employed, allowing the researcher to explore the interviewees' views and experiences in more depth, and to allow for other lines of enquiry to be pursued according to the circumstances (Kvale, 1996). 'Why'-type questions were avoided as much as possible as they can trigger defensiveness (Becker, 1998). An interview protocol was devised (see Appendix B) and was used consistently across all interviews.

All interviews were pre-arranged either by telephone or by e-mail and followed by an e-mail outlining the key aims of the research. In all cases, the aims of the study were re-stated at the beginning of the interview and the voluntary participation in the study emphasised. Interviewees were informed that they were not obliged to answer a question if they did not wish to do so. No interviewee declined to answer any of the questions posed. Permission was asked to record the interview and all interviewees gave their consent. At all times the researcher tried to make the interviewee feel comfortable and relaxed, since this is a critical aspect of this method (Mauthner, Birch et al., 2002). There were, however, instances were some informants revealed sensitive information or expressed strong opinions about other people. In these cases re-assurance on confidentiality was given.

Interviews were conducted face-to-face except in four cases (A1B, H16, H18 and AM26 – see below the designation and role in the project) that were carried out over the phone following a similar process and using hands-free equipment for the recording. Most of the interviews were conducted in private offices at the School of Management or MCompany's premises. A first set of interviews was conducted with key informants at the end of the first phase of project 1 (HRO) in August 2003 and at the end of project 2 (PPP) in December 2004–January 2005. The rest of the interviews were conducted during the first semester of 2006.

The timing of the interviews was important in this study. The first set of interviews was conducted right after the research phase of the five projects was complete. The interviews were conducted with project leaders and project sponsors as well as the founders of MC Centre (as indicated in Table 5.2). At the time of conducting the second set of interviews the following individuals were no longer employed by MCompany: the Managing Director of Management Consultancy (A2), the non-Executive Director (A3), the Research Consultant (A4), the Director of Strategic Consultancy (H8), the Marketing Manager (H8B), a Highways Client Manager (H9), the Director of Business Transformation (H12), a Senior Consultant (H16) and the Director of Decision Analytics (AM24). Several of these respondents stated that they were willing to reveal more information in the second interview than in the first, because they no longer had close ties with MCompany. This was regarded as an advantage to this study.

All interviews were recorded using a digital recorder and an external condenser microphone to enhance the quality of the audio recording. The interviews were fully transcribed and the transcripts loaded into the software package Nvivo for analysis as explained in the previous sub-section.

Overall, 36 semi-structured interviews were conducted with an average duration of 53 minutes. The sampling method for interviews was to interview all the people that played a role in the different research projects. I managed to interview all the relevant informants who are listed in Table 5.2. For those individuals who were no longer working for MCompany, contact details were obtained, and when contacted, all were enthusiastic about collaborating in the research.

Designation	Position in the organisation	Role in the research projects	Interview(s) date(s)
A1	Chief Executive Officer MCompany.	Chairman of the MC Centre (2004). Contributor. Co-founder of the MC Centre.	20/08/2003
A1B	Chief Executive Officer MCompany (from August 2003).	Contributor.	08/08/2006
A2	Managing Director of Management Consultancy.	Co-director of the MC Centre. Project leader project 4 PFI. Contributor in remaining projects.	04/08/2003 and 02/02/2006
A3	Non-Executive Director. MCompany.	Visiting Professor of Infrastructure Management. Contributor. Co-founder of the MC Centre.	04/08/2003 and 24/01/2006
A4	Consultant in Strategic Consultancy.	MC Centre Researcher Consultant (MCompany).	02/03/2004 and 20/03/2006
A5	Marketing and Project Manager.	Coordinator of the MC Centre (MCompany) during 2002.	20/01/2006
A6	Director of Research Cranfield School of Management and director of the AMRC.	Co-director of the MC Centre. Content expert (HRO). Co-founder of the MC Centre. Contributor in research projects.	14/03/2006
A7	Senior Research Fellow. Cranfield School of Management.	Project Manager. Content expert (HRO). Contributor remaining projects.	27/03/2006
H8	Director of Strategic Consultancy.	Project leader (project 1 HRO). Contributor in project 3 (AssM).	27/08/2003 and 13/04/2006
H8B	Marketing Officer.	Contributor.	12/04/2006
H9	Client Manager (Highways).	Contributor.	09/02/2006
H10	Managing Director (Rail) and member of MCompany board.	Project sponsor and contributor.	13/02/2003
H11	Project director (Highways).	Contributor.	08/02/2006
H12	Director of Business Transformation.	Project leader (project 5 BussT). Contributor.	09/03/2006
H13	Director of Local Government Services.	Assists to the client events. Initiator of the third phase of HRO project.	15/02/2006
H14	Client Manager (Rail).	Assists to the client events. Contributor.	8/02/2006
H15	Senior Consultant (LG Services).	Project Manager HRO3.	26/01/2006
H16	Senior Consultant (LG Services).	Project Director in HRO3 (2004-2005).	13/03/2006
H17	Director of H Highways.	Project Sponsor HRO3.	12/07/2006
H18	Director of Local Government Consultancy.	Project Director in HRO3 (2006).	12/07/2006
P19	Managing Director of Government Services.	Project sponsor. Contributor.	20/12/2004 and 16/01/2006
P20	Director of Business Development.	Project leader.	20/12/2004 and 23/01/2006
P21	Service Director (Highways).	Contributor.	02/02/2006
P22	Associate Director (Public Services Research) Government Agency.	Contributor.	10/01/2005
P23	Project Director (Roads & Rail).	Contributor.	01/02/2006
AM24	Director of Decision Analytics.	Project leader.	10/03/2006
AM25	Project Director. Decision Analytics.	Contributor.	13/02/2006
AM26	Project Director. Decision Analytics.	Contributor.	21/03/2006
AM27	Senior consultant.	Contributor.	13/02/2006
AM28	Sector Leader (Water).	Project leader (from February 2004).	20/02/2006

Table 5.2 List of interviewees and dates of interviews. Source: compiled by author.

Table 5.2 summarises the details of the people interviewed. The letters (column 1) are used to ease the data management and data analysis. The letters symbolise the individuals' involvement in the five projects. "A" (all) means that the individual participates in all projects. "H" (high reliability organisations) indicates that the individual participated in project 1: High Reliability Organisations. "P" designates that the individual participated in project 2: Public Private Partnerships. Similarly, "AM" (Asset Management) highlights members of project 3: Asset Management. The individuals of the project private finance initiative (PFI) and business transformation (BussT) also participated in other projects. In particular, the project leader of the PFI project was the Managing Director of Management Consulting (A2) and the project leader of BussT (H12) was also a participant in the HRO project.

5.5.3. Repertory grids

5.5.3.1. Description of the method

Repertory grid is a method used to elicit a person's description about an aspect of their reality. Repertory grids are based on Kelly's (1955) Personal Construct Theory (PCT), which postulates that people operate constructing internal representations of the phenomena they experience. People develop these internal representations by recognising regularities and patterns represented internally by means of contrasts called 'constructs'. To understand someone's meaning it is necessary to know both the 'implicit' as well as the 'expressed' pole of the construct. Thus, repertory grids employ a set of rating scales which use the individual's own constructs as the subject matter on which ratings are carried out.

Kelly was considered primarily a clinical psychologist and so repertory grid has traditionally been widely used as a way to increase the psychologist's understanding of how the person sees the world (Fransella, Bell et al., 2004 p.170). For an overview of the use of repertory grid in clinical psychology see Winter (1992). Repertory grid has also been used in other fields such as social work (Borell, Espwall et al., 2003), educational research (Ravenette, 1999) and nursing (Costigan, Ellis et al., 2003).

In the business and management field repertory grid has also been used to gain an understanding of people's perception of organisational issues (see Stewart, Stewart et al., 1981). For instance, repertory grid has been applied to career development (Fournier, 1997) and human resources development (Easterby-Smith, 1980), change management (Cassell, Close et al., 2000), marketing (Marsden and Littler, 1998) and operations (Goffin, Lemke et al., 2006). Repertory grid has also been employed in studies of knowledge in organisations (Coopman, Hart et al., 1997).

In this thesis, repertory grid is used to gain a deeper understanding of individuals' internal representations of management ideas and how they construe these ideas. In particular, repertory grid is used to identify the constructs that consultants employ in characterising the theme of each of the research projects. This will allow the comparison of projects by comparing the constructs that the interviewees use to describe the five projects.

Repertory grid has four main components: topic, constructs, elements and ratings (Fransella, Bell et al., 2004). The *topic* can be described as a particular realm of

discourse or a particular aspect of experience. The topic of the repertory grid is the perception of attributes of management ideas. People construe things by means of *constructs*, thus to understand how an individual sees the world in his/her own terms, one must identify that person's constructs. Constructs are the basic units of description and analysis of that particular topic. Constructs are used to discover how the person thinks and what meaning she/he ascribes to the topic. In order to elicit people's constructs, elements are used. *Elements* are examples or instances that are compared within a particular topic to discover a person's constructs. In this study elements are management ideas. *Ratings* are the levels against which each element is assessed on each construct. Overall, elements, constructs, and ratings provide a representation or precise statement of the way in which the individual thinks of a topic.

5.5.3.2. *The conduct of the repertory grid interviews*

Conducting repertory grids requires familiarity with the method and skills similar to those needed to conduct interviews. The process of conducting repertory grids usually comprises the following steps (Jankowicz, 2004). Firstly, the topic of the research is defined. Then, secondly, a set of elements are identified. For this study elements will be 'management topics' or 'ideas', including the topics of the five research projects. In step three the interviewee will be presented with a triad of elements, normally written on cards, and will be asked to identify two elements that are similar in some way and a third that is different. The person is then asked *"what do two elements have in common as opposed to the third?"* The constructs that make two ideas similar are noted on the left side of the grid, leaving the right side to write the opposite construct. Finally, constructs are rated on a pre-determined scale, in this case from 1 to 5 (see Figure 5.1).

The elements of the grid can either be presented to the participant or the person can choose his/her own. There is no difference in how the data is gathered and this will depend on the aims of the investigation (Goffin, 1992). Since one of the aims of this thesis is to understand consultants' perceptions of the content of MCompany projects, five elements corresponding to the themes of the projects will be presented to the participant, and the other five will be selected by the participant and will be ideas they are familiar with. The elements will be presented in triads, chosen randomly until all combinations have been covered. Triads of elements are mostly used in repertory grid research (Jankowicz, 2004) although dyads have also been employed (see Ryle and Lunghi, 1970).

In relation to the constructs in repertory grid, researchers have two options. The first is to provide the participant with the constructs and ask them to rate the elements against these constructs. The second is to ask the interviewee to provide entirely his/her own constructs. Analysis of these two options has concluded that their relative merits are similar (Goffin, 1992). For this research, individuals will be asked to provide their own constructs. Figure 5.1 shows the template of the grid used. The elements are written in the top oblique rows. The constructs are written in the left column as they emerge. The poles or opposites of the emerging constructs are written in the right column. Ratings occupy the centre of grid.

Figure 5.1 Example of the repertory grid template

5.5.3.3. *Analysis of repertory grid*

Given the nature of the repertory grid, there are many analytical procedures that can be used, both qualitative and quantitative. Regardless of the approach for analysing grids, the fundamental task is to identify the participant's meanings, and to draw appropriate implications for the research. The focus of the analysis of grids in this thesis is to illuminate the attributes that management consultants use to make sense of management ideas and the attributes that characterise the ideas of the successful (or otherwise) research projects. Therefore, the relevant analyses of grids for this study are primarily qualitative in nature.

In order to carry out the analysis, a description of the basic grid will be conducted, covering process analysis, eyeball analysis and construct characterisation (Jankowicz, 2004). *Process analysis* focuses on what goes on during the elicitation addressing questions such as 'how did the interviewee react to the introduction of the topic' or 'how did the interviewee respond to the elements proposed?'. *Eyeball analysis* refers to stepping back from the detailed elicitation procedure to gain an understanding of patterns and potential significant results based on elements ratings. Lastly, *construct characterisation* involves the identification of key constructs and their importance for the aims of the study (Jankowicz, 2004 pp. 77-88).

Construct characterisation and the identification of core constructs is accomplished by analysing the number of times participants mention a construct and its average variability. The rationale for this criterion has been described in detail in the research methods literature (Goffin, 2002) and discussed in empirical research (Goffin, Lemke et al., 2006). In brief, frequency is considered an important indication of importance. If many individuals refer to a specific construct, it is likely that that construct will have some significance. However, a high number of mentions can also suggest that a construct is obvious, and therefore likely to appear in several individuals' construct list. Thus, variability is employed as another indication of importance. A construct with a wide spread of ratings differentiates strongly amongst various elements. The variability

of the constructs is calculated using GridLab (Walter, 2002), a special software for analysing individual grids.

In order to capture the richness of the elicitation process, repertory grid interviews are recorded and the transcripts content-analysed following an inductive approach (Patton, 2002) similar to the one used for the semi-structured interviews. Relevant data is reduced and displayed using tabulated formats to facilitate analysis and comparison of attributes across projects (Miles and Huberman, 1994).

Overall, the advantage of repertory grid is that it constitutes an ideal method to understand individuals' perceptions from their own point of view without imposing the researcher's perspective. The value of repertory grids is "the fact that perceptions of nebulous relationships can be written down rigorously. The visual representation helps to focus the analysis. It also involves verbalising constructs which otherwise remain hidden" (Easterby-Smith, Thorpe et al., 1996 p.6). Repertory grids give the interviewer access to how individuals construe and make sense of their world in their own words. Another advantage is that repertory grids enable the researcher to elicit and present data in a structured way that can be further analysed using either quantitative or qualitative methods. Repertory grid may be disadvantageous if the respondents find it difficult to understand the technique or if the constructs elicited are not handled in a sensitive manner (Cassell and Walsh, 2004). Overall, the interpretation of the grid data may be problematic and, as interviews in general, subject to researcher's bias (Goffin, 2002).

5.5.3.4. *How repertory grid was used*

In this subsection, the procedures employed to conduct repertory grid are presented in detail. How the technique was piloted and used, and an example of a completed grid are reported. The preliminary design of the method was based on the Jankowicz (2004) and Fransella, Bell, et al. (2004) manuals. This initial design was refined based on other published works that have used repertory grid in organisational and management studies (Cassell and Walsh, 2004; Easterby-Smith, Thorpe et al., 1996; Goffin, 2002; Stewart, Stewart et al., 1981). Finally, empirical studies in this field were reviewed to gain some practical insights into the design and analysis of repertory grid data (Fournier, 1997; Goffin, Lemke et al., 2006; Jaina, 2001; Preiss, 2000).

Discussions were held with fellow academics who have used repertory grid in doctoral research (Adams, 2004; Hair, 2004), and their suggestions considered in crafting the approach. A senior academic from Cranfield School of Management and an expert in the use of repertory grid was consulted. His advice was instrumental in strengthening the way the overall method was presented to participants and in particular the way in which elements were selected. Participants were asked to distinguish between relevant and irrelevant management ideas which enhanced the contrast of the elements and aided the elicitation of constructs. Goffin, Lemke et al. (2006) used a similar approach (p.196) distinguishing between 'close', 'not too close', and 'far' relationships in supplier–manufacturer interactions. They asked interviewees to name suppliers with whom they work, distinguishing three in 'close' relationships, three in 'distant' and three in 'average' relationships.

Before conducting the main interviews, the repertory grid was piloted. Two participants, one from MCompany and a researcher from Cranfield familiar with the aims and topic of the research project but not involved in it were interviewed using repertory grid. These pilot interviews revealed several actions to improve the method. Initially, nine elements or business and management ideas were considered for comparison, asking individuals to select three that were 'relevant', three that were 'relevant only to some extent' and three that were 'irrelevant'. Interviewees found it difficult to differentiate between 'relevant', 'relevant to some extent' and 'irrelevant'. Therefore, the distinction was changed to 'relevant' vs. 'not relevant'. Design principles for repertory grid place an emphasis on the contrast of elements. Thus, this decision strengthened the design of the grids.

The aspiration was to elicit as many constructs as possible aiming for at least ten. The grid analysis packages GridLab (Walter, 2002) and Webgrid III (Gaines and Shaw, 2003) were used to analyse the pilot grids. The GridLab statistical algorithm considers that by using n-1 constructs (n= number of elements) the validity of statistical analysis is guaranteed. Therefore interviews ended when participants reached 9 constructs. Having the same number of elements and constructs for all interviews facilitated the calculation of variability figures.

The pilot interviews also revealed that individuals may take some time to select five management ideas, particularly things that were not relevant. In addition, it was seen that interviewees could be tempted to select 'tasks' or 'functions' rather than management ideas. In order to facilitate the elicitation of elements, when appropriate, participants were allowed to glance at a copy of a list of management and business ideas that appear among the appendices of a book about management and business ideas (Davenport, Prusak et al., 2003). This list contains more than 150 ideas covering a wide range of areas.

The pilot interviews were useful to refine aspects of the layout and aesthetics of the grid, such as the size, the shading of even columns, position of the page, etc. The pilots also showed the usefulness of using small cards (12 x 7.5 cm) with the names of the elements printed on them, which enabled participants to select triads.

Similar to the semi-structured interviews, all the repertory grid interviews were planned in advance and dates agreed beforehand with the participants. Interviewees were asked if they were willing to have the interviews recorded, to which they all agreed. Confidentiality was granted and the participants were explicitly assured that no quotes or statements would be attributed to any one individual. Repertory grid interviews were then recorded using a digital recorder and a condenser microphone to ensure the best sound quality possible.

The repertory grid interviews were conducted following the steps outlined in section 5.5.3.2. In selecting participants for the repertory grid, a requirement was that individuals were familiar with the content of the research projects and knowledgeable about the different elements to be explored (Goffin, 2002; Jankowicz, 2004). A total of 20 individuals were both familiar enough with the content of the research projects and the overall programme to be considered valid informants. One individual was used for a pilot grid, and another (H10) could only offer an hour of this time at the day of the

appointment, and this time was used to conduct the semi-structured interview. In total, 18 usable grids were completed, adding up to 19 hours 30 minutes of recording, which leaves an average duration of 1 hr and 05 min per grid.

5.5.4. Archival data and documents

5.5.4.1. Description of the method

The fourth source of data used in the empirical work of this thesis is the collection of archival data, documents, records and written artefacts. These written documents are rich information resources, which can provide valuable insights about an organisation, its processes and its people (Hill, 1993). Written materials can be considered 'social facts' in that "they are produced, shared and used in socially organised ways. They are not however transparent representations of organisational routines, decision-making processes or professional diagnoses" (Atkinson and Coffey, 1997 p.47). In the context of this study, 'archival data' and 'documents' refer to *texts* that have not been produced by the researcher in conducting empirical research, for instance through an interview (Silverman, 2001). The following materials are considered 'archival data' and 'documents': meeting agendas, minutes, presentations, planning documents, reports, project plans, models, diagrams, organisation charts, e-mails, memoranda, letters, etc. These texts provide rich data which may become the object of an empirical study in itself or a complementary method in search of triangulation (Patton, 2002). Document analysis may help the researcher to confirm (or question) informants' statements. Documentary research provides an excellent means of testing the accuracy of different perceptions of the users and potentially indicates alternative explanations to significant phenomena (Rowlinson, 2004).

Researchers have traditionally analysed text through at least four approaches: content analysis, analysis of narrative structures, ethnography and ethnomethodology (Silverman, 2001). *Content analysis* refers primarily to establishing categories and counting the number of instances of a particular theme and has a strong quantitative focus. The *analysis of narrative structures*, or semiotics, is the analysis of sign systems and how they relate to one another to create meaning. *Ethnography* seeks to understand the organisation of social action in specific contexts. Finally, *ethnomethodology* aims to understand the methods individuals use to organise the world focusing on the skills that people use in producing and understanding descriptions.

The most relevant approach to the analysis of text in this thesis is the ethnographic approach. Ethnographers are concerned with the processes through which texts depict 'reality' rather than with the truthfulness of the statements. Written materials can be considered 'social facts' in "that they are produced, shared and used in socially organised ways. They are not however transparent representations of organisational routines, decision-making processes or professional diagnoses" (Atkinson and Coffey, 1997 p.47). Documents must be approached for what they are, and interrogated with questions such as: What is recorded?; How are they written?; What are the purposes?; What is omitted? (Hammersley and Atkinson, 1983 p.142-43). In analysing documents, the researcher faces a number of challenges, such as access to the documents, understanding how and why they were produced, determination of the accuracy of documents and linking documents with other sources of data (Miller, 1997).

5.5.4.2. *Results of archival data and documents*

All relevant documents, whether in paper or in electronic format, were systematically gathered and indexed in order to facilitate an audit trial, and in order to build what Yin (2003) calls a 'case study database' to increase the validity and reliability of the case. The author had direct access to all documents produced from December 1999 to September 2006.

An indexing structure was used to differentiate between different levels of analysis. Documents for each project are also divided into different groups such as 'planning documents', 'meetings', outputs, etc (see subsection 5.5.4.1). This structure enabled linking of documents to other sources of data, such as interviews and field notes.

In total, 414 documents were gathered (see Appendix D). These documents were classified into seven categories according to their content and purpose: MCompany and Cranfield School of Management, MC Centre, project 1 High Reliability Organisations, project 2 Public Private Partnerships, project 3 Asset Management, project 4 Public Finance Initiative and project 5 Business Transformation. Within these groups a further sub-level was devised containing a number of different folders. The types of documents that comprise the database are:

- 1. Planning documents: vision and mission statements, work programmes, research and dissemination strategies, project plans, budgets, contracts and agreements, internal structure, roles and responsibilities, work processes.

- 2. Meetings and communications documents: agendas, minutes and actions, electronic mails, letters, memoranda, review documents.

- 3. General information documents: brochures and leaflets, newsletters, proposals, websites and intranet sites, reports and accounts, corporate plans.

- 4. Documents related to events: client lists, letters and invitations, event programmes, designs of interactive activities and small groups, presentations, and handouts

- 5. Outputs: research reports, practitioner articles, academic papers, submission to conferences, newspaper clips, press releases, discussion papers, course and seminar materials, and lecture notes.

All the documents were organised using the indexing structure mentioned above, which resulted in an easily accessible and auditable case study database.

5.6. Overall analytical strategy for the case study

In order to bring together all data to explain the case, an analytical strategy and analytical techniques are needed. These are described below.

Overall, the *analytical strategy* of the empirical part of this thesis is primarily *inductive*, aiming to identify patterns, themes, and categories in the data (Strauss and Corbin, 1998). However, once patterns and themes have been identified, the data analysis can also be more deductive in nature (Patton, 2002) to allow a constant interplay between theory (condensed in a conceptual framework) and the empirical evidence.

> Sometimes as with analytic induction, qualitative analysis is first deductive or quasi-deductive and then inductive as when, for example, the analyst begins by examining the data in terms of theory-derived sensitizing concepts or applying a theoretical framework developed by someone else (Patton, 2002 p.454).

The approach to data analysis adopted in this study has similarities but also differences with 'grounded theory' (Glaser and Strauss, 1967). In grounded theory, the researcher lets the data speak by itself, allowing the themes to emerge. Analytic induction in contrast, begins with a set of propositions that are subsequently explored. This analytical strategy is consistent with the philosophical position and retroductive research of the thesis described earlier in the chapter.

Four main analytical techniques are used in the empirical work of this thesis to integrate and analyse the data collected: case description, cross-case comparison, alternative explanations and causal analysis. Each of these techniques is described below:

Case description, refers to the development of a descriptive framework for organising the case. Yin (2003) recommends this analytical strategy, and claims that it is one of the most challenging aspects of doing case study research. The case description is a well-established analytical technique. An exemplar that has informed this thesis is Snook's (2002) single case study of an accident caused by friendly fire in a military organisation. The case description in this thesis comprises 'thin' and 'thick' descriptions (Denzin, 2001; Geertz, 1973). The 'thin' description has been presented in chapter 2 and consisted on a non-analytical account of the context of the research. The focus of chapter 2 was to describe '*what* happened' in the case. In chapters 6 and 7 the conceptual framework derived from the systematic review (chapter 4) is used to provide a 'thick' description of '*how* knowledge and learning happened' in the case. Chapter 6 focuses on the MC Centre, analysing aspects relevant to all projects, and chapter 7 focuses on the detailed analysis of each project.

Cross-case comparison or cross-project analysis is used as a means to understand the significance of the findings of each project (Miles and Huberman, 1994). The cross-project comparison preserves the uniqueness of each project (Noblit and Hare, 1988) but enables the identification of the propositions that are likely (or unlikely) to occur under certain structural conditions (Glaser and Strauss, 1970). The cross-project analysis places an emphasis on identifying differences and similarities across projects to gain a deeper understanding of the key enablers and barriers to learning and knowledge processes. The cross-project comparison is presented in chapter 8.

Alternative explanations, or as Yin (2003) describes them 'rival' explanations, are used to explore alternative propositions to those identified in the organisational learning and knowledge theories. The 'alternative explanation' is an analytical technique that aims to provide answers to the question '*why*' learning and knowledge happened'. This is presented in chapter 9.

Analysis of the association of enablers and barriers is used as an analytical technique to synthesise the findings of the empirical work considering the wider context in which they were embedded. This analysis borrows from causal maps which are a form of cognitive map that tie concepts together by relations of causality (Weick and Bougon, 1986), or association. The maps of association are used to present an overall

explanation of the unfolding events that led to different outcomes in the different projects and appear in chapter 10.

5.7. Quality of research design

5.7.1. Generalisability

Despite the many positive aspects of qualitative research, some studies continue to be criticised for their lack of objectivity and generalisability (or external validity). 'Generalisability' can be defined as the degree to which the findings can be generalised from the study sample to the entire population. This conception of generalisability stems, however, from positivist ontology. Valid generalisation is a laudable aim from a positivist view of science, but may have little relevance to the principles and goals of realist science that is concerned with gaining a comprehensive understanding of underpinning mechanisms and the context within which the phenomena occur.

Stake (1980) proposed the concept of 'naturalistic generalisation' which is described as a partially intuitive process arrived at by recognising the similarities of objects and issues in and out of context (p. 69). Critics of the poor generalisability of case studies often compare them with surveys when this comparison is not possible: survey-based research relies on 'statistical generalisation' whereas case study relies on 'analytical generalisation'. In analytical generalisation the researcher aims to generalise findings to 'theory' not to a wider population of cases. Theory is the level at which the generalisation of the case study will occur (Yin, 2003).

In relation to the issue of generalisability, Stake (2000) argued that "potential for learning is a different and sometimes superior criterion to representativeness" (p. 446). In many situations, a small sample size may be more useful in examining a situation in depth from various perspectives, whereas a large sample would be inconsequential. The selection of a case that is typical and provides a unique opportunity to learn about an interesting phenomenon is the driving principle of this thesis. The purpose of this research is to understand learning and knowledge processes and their enablers and barriers in a specific context, where in-depth descriptions, discovering meaning and understanding are essential components of the research. In this situation, the in-depth single case study is the best vehicle to gain an understanding of learning and knowledge processes and their enablers and barriers. The research reported in this thesis, subscribes to the principle of generalisability outlined above seeking 'analytical generalisation' rather than statistical representativeness. In so doing this study contributes to theory by developing a theoretically-informed, empirically-grounded conceptualisation of learning and knowledge processes aided by the in-depth access to the field setting.

5.7.2. Validity and reliability

The quality of case study research may be enhanced by paying attention to traditional measures of research quality such as validity and reliability. Their significance in case study research and how they are addressed are described as follows.

5.7.2.1. *Construct validity*

Construct validity refers to establishing correct measures for the concepts being studied. Construct validity may be enhanced by using theory to consistently inform the research design and using multiple sources of evidence and multiple key informants (Yin, 2003).

In relation to consistency in the use of theory, a narrative review of Organisational Learning (OL) is reported in chapter 3. This review provides a conceptualisation and definition of learning and knowledge well based in existing theory. In addition, chapter 4 contains a systematic review of the field in which the key knowledge processes and groups of enablers and barriers are identified as a result of the synthesis of 107 studies.

In order to maximise the validity of the case study, the research design placed an emphasis on using multiple sources of evidence in search for triangulation. There are at least four types of triangulation (Patton, 2002). Triangulation of sources, or data triangulation, where different sources of data that are collected by the same method are compared. Methods triangulation occurs when a researcher applies several data collection methods to study a phenomenon. Analyst triangulation uses multiple investigators to review the findings. Finally, theory triangulation refers to the use of different perspectives to address the same dataset.

This study achieves triangulation through the first three methods. *Data triangulation* (Sieber, 1973; Yin, 1983) is achieved because a vast amount of data was collected using each of the methods described above from different informants. The data collected via a particular method, e.g. an interviews, was compared and contrasted with all other data sources collected using that method (i.e. all other interviews). *Methods triangulation* is achieved by gathering data through four methods: participant observation, semi-structured interviews, repertory grid and documentation-archival data. *Analyst triangulation* is achieved by systematically reviewing the findings and using other researchers to review the data. Participants in the research were also briefed about interim results. They all agreed with the findings. One senior consultant (AM27) suggested considering 'output' as a group of enablers and barriers in addition to the 'content', 'practices' and 'people'. No other suggestions were made. In the discussion section of this thesis, theories from multiple disciplines and perspectives are used to help explain the case.

5.7.2.2. *Internal validity*

In explanatory studies internal validity addresses how well causes and effects are justified and sources of bias eliminated. In exploratory studies such as this thesis, internal validity can be conceptualised as the extent to which inferences are sufficiently grounded in the data.

In order to align the concepts being studied with the evidence being observed, the original sources of data are described in detail, findings backed by numerous quotations from informants, and tabulated summaries presented throughout the main body of the thesis and in the appendices. Overall, in order to enhance internal validity, four analytical techniques are employed: case description, cross-case comparison, alternative explanations and map of associations.

5.7.2.3. Reliability

Reliability is concerned with the use of methods in such a way that if another person was to conduct the same study she/he would arrive at the same result. In order to enhance reliability, and diminish errors and biases Yin (2003) suggests documenting all of the procedures followed. Reliability in this study is ensured by the provision of audit trial in both the theoretical (systematic review) and empirical work (see methods of data collection).

Yin (2003) argues that in case study research, the way in which the data is organised is important, and should be clearly differentiated from the case-study report. The empirical data of this thesis has been systematically organised into categories according to the methods of data collection and within these according to the type of information contained. The database is auditable and available for independent inspection increasing the reliability of the enquiry. The empirical part of the thesis is fully documented in the methodology chapter and in the appendices as follows:

- Appendix A1. Systematic Review Keywords and Searches: describes in detail how the searches were conducted and its results.

- Appendix A2 Descriptive analysis of the literature: provides in a tabulated format details of all the studies included in the review.

- Appendix B. Interview Guide: specifies the questions posed to interviewees.

- Appendix C. Table of documents: lists all the documents that comprise the document base of the case study.

- Appendix D. Coding structure. Details the construction of the coding of the semi-structured interviews.

- Appendix E. Table of constructs. Specifies the constructs, definitions and the groupings made.

- Appendix F. Inter-coder reliability check of construct groupings.

Table 5.3 summarises how this thesis addresses the critical aspects of research quality when using the case study method.

Quality aspect	Strategy to enhance quality	Place in the thesis
Generalisability or external validity	Analytical generalisation: Theoretically-informed, empirically-grounded conceptualisation of learning and knowledge processes and their enablers and barriers.	Theoretically informed: chapter 3 (organisational learning theory) and chapter 4 (systematic review on knowledge and learning within and across organisations).
Construct validity	Using theory to consistently inform the research design. Using multiple sources of evidence and multiple key informants.	Chapter 3: Narrative review of organisational learning Chapter 4: Conceptual framework derived from systematic review. Chapter 5. Methodology and research design explained in detail specifying the four methods of data collection. Chapter 5: Methodology. Describes the methods used, their rationale and the data analysis methods.
Internal validity	Using an analytical strategy that combines four techniques: (1) case description, (2) cross-case comparison, (3) alternative explanations and (4) causal analysis.	1. Chapter 2: 'thin' description of the case Chapters 6 and 7: 'thick' description of the case 2. Chapter 8: Cross-case comparison. 3. Chapter 9: Alternative explanations and discussion 4. Chapter 10: causal analysis
Reliability	Detail description of methods of data collection and how they have been used. Use of additional analysts. Detailed explanation data collection and reporting of the data actually collected.	Chapter 5. Methodology Appendix B. Interview Guide Appendix C. Table of documents Appendix D. Coding structure Appendix E. Table of constructs Appendix F. Inter-coder reliability check of construct groupings.

Table 5.3 How research quality is addressed in this thesis

5.8. Summary of research design

Overall, this chapter has presented the research questions, philosophical position underpinning this study and the research design that guides empirical work. The methods for data collection have been discussed, aiming to provide a clear description and justification of how learning and knowledge processes will be studied and their respective enablers and barriers and all are summarised in Table 5.5.

Research design	Explanation
Aims of the thesis	- To explore learning and knowledge processes within and across organisations in the context of a research programme between a management school and a consulting firm. - To identify the enablers and barriers of these learning and knowledge processes.
Philosophy: ontology and epistemology	This thesis adopts realist ontology. Its epistemology hinges around the explanation of unobservable phenomena in relation to underlying structures and mechanisms.
Theoretical domain	Organisational learning and knowledge.
Research questions	LEARNING AND KNOWLEDGE PROCESSES. - What are the key processes in sourcing externally-generated knowledge? - How is new knowledge integrated into the consulting organisation's existing knowledge base? - How is knowledge used within the organisation? - How, if at all, does new knowledge become part of the routines of the organisation? ENABLERS AND BARRIERS TO LEARNING AND KNOWLEDGE PROCESSES - What are the perceived attributes of the content of management ideas and research evidence as perceived by consultants? And how does this affect learning and knowledge processes? - What are the 'practices' undertaken in each of the research projects that may facilitate or hinder learning and knowledge? - To what extent does the nature of human relationships facilitate/hinder knowledge processes?
Methodology	In-depth longitudinal single case study with embedded units of analysis.
Unit of analysis	The research projects. Five projects are selected within the case study: project one successful (High Reliability Organisations); project 2 partially successful (Public Private Partnerships); project three largely unsuccessful (Asset Management); project four abandoned (PFI), project five failed to initiate (Business Transformation).
Level of analysis	Learning and knowledge is a multi-level phenomenon, thus individual, group (project team), organisation and inter-organisations constitute the levels of analysis.
Methods of data collection	Interviews, participant observation, repertory grids, documents and archival data.
Analytical strategy	Inductive analysis. Use of the following analytical techniques: (1) case description (2) cross-case comparison (3) alternative explanations and (4) map of associations

Table 5.4. Research design summary table

6. FINDINGS: ANALYSIS OF THE MC CENTRE

6.1. Introduction

In case study research context is important to understand the phenomena being investigated (Yin, 2003). The aim of this chapter is to report findings about the MC Centre, which is the context where the research projects were embedded. Thus, what follows is a detailed analytical exploration of the overall research programme and its context. Then a detailed analysis of each of the five research projects is provided. The conceptual framework 'content', 'people' and 'practices' derived from the systematic review is used to guide the analysis and to provide a structure for the chapter. The aim of this chapter is to bring together the case study evidence in search for "plausible explanations" (Patton, 2002 p. 90) for learning and knowledge processes in the MC Centre and the 'general' enablers and barriers to those processes. The term 'general' refers to enablers and barriers that do not pertain to any project in particular, but that affected all of them.

In chapter 2 a 'thin' description (Denzin, 2001; Geertz, 1973) of the case and details of 'what happened' during the research program was presented. This employed a chronological approach for each level of analysis starting with the broadest context, MCompany and Cranfield School of Management and progressively focusing down on the individual projects. In this chapter the analysis focuses on MCompany and the MC Centre using empirical data to provide a 'thick' description to understand how different enablers and barriers affected learning and knowledge processes in the case.

Reporting qualitative research involves a "complex and multifaceted analytical integration of disciplined science, creative artistry, and personal reflexivity" (Patton, 2002 p. 432). These aspects have been taken into account during the analysis of the case study in chapters 6, 7 and 8. Unbiased analysis (or disciplined science) is achieved by regularly referencing the sources of the data in use. A balanced triangulation of data (creative artistry) from multiple informants (both from MCompany and Cranfield) and from multiple sources is pursued by continuously interrogating the evidence. Personal reflexivity is openly shared with the reader in the preface (page vii) and in the final word of the thesis (section 10.6), to increase the reliability of the interpretation of findings.

In order to facilitate the analysis, the enablers and barriers to learning and knowledge are separated into different subsections. However, in describing the findings some enablers and barriers may become intertwined. This is the case, for instance, in an episode of conflict caused by the misinterpretation of research findings in the HRO project. This episode appears in the subsection "enabling practices of the HRO project" though it really was seen as a barrier to the learning in the project. In order to aid the reading of the findings chapter, key enablers and barriers are *italicised* and a summary

table provided at the end of each 'practices', 'content' and 'people' subsections. These tables are meant to provide easy-to-read tables and to facilitate audit trail of the cross-case comparison in the next chapter.

The unit of analysis and the focus of the findings are the five research projects (see chapter 7). A cross-case comparison is provided in chapter 8. However, some issues are considered contextual variables at the level of the MC Centre that affected all the projects. Understanding some of these issues is important to better comprehend why some projects achieved better outcomes than others, and how, overall, the MC Centre was thought to have failed in delivering its mission. Thus the following subsections provides a brief summary of 'practices', 'content' and 'people' of the MC Centre.

Some of the interviews raise sensitive information about other people involved in the project. A reader who is not familiar with MCompany would not be able to identify any of the individuals that appear in this study. However, it was felt that someone who knew the company or the staff could ascertain the real identity of the interviewee. As such, in order to totally secure the anonymity of interviewees some quotations are not attributed.

6.2. Practices at the MC Centre: resources, purpose and performance indicators

6.2.1. A co-production approach to management knowledge

This subsection first describes the approach taken to conduct the research projects, and then analyses the aspects that influenced the enablers and barriers to them. All the case study data, particularly the interviews, demonstrate that individuals involved in the projects believed the research process was effective, and their perception of the overall research approach was very positive. The comment that the PPP project leader made encapsulates this perception:

> "Academic research with practitioner knowledge and experience, I think the combination of those two things is really powerful" (P20, Business Development Director, 20/12/2004).

The approach to conduct the research projects was characterised by the use of systematic review and a co-production approach to management knowledge. Systematic review was employed as a method to locate, appraise and synthesise relevant existing evidence in a given field. This approach has been briefly reported in chapter 2 and published elsewhere (Tranfield, Denyer et al., 2003). Overall, the systematic review was used as a vehicle aimed to enhance the quality of the review of the evidence, but at the same time ensuring that the reviews were practitioner- and context-sensitive. The project teams used systematic review to provide insights through theoretical synthesis, which would then be collectively discussed and interpreted.

The systematic reviews were embedded in the overall approach labelled co-production of management knowledge. This approach is defined by Tranfield, Denyer, Marcos *et al.* (2004a; 2004b) as the combination of a sound knowledge base synthesised by systematic review with practitioners' knowledge and expertise.

This approach was operationalised in four phases: phase 1 planning the review, phase 2 conducting the review, phase 3 reporting the findings, and phase 4 utilising the findings.

In *planning the review* the key task after forming the project team was to identify questions that relate to specific management issues and turn these into suitable review questions. Through group discussion, the panels were encouraged to share their understanding and experience of significant managerial problems. Emphasis was placed in identifying a question that was of specific interest to MCompany and its clients and having the potential to inform theory. This proved a significant challenge, particularly the 'construction' of a review question that was clear and specific.

Conducting the review was done by systematically searching citation databases and cross referencing and complementing the sources retrieved with those obtained in practitioner domains (reports, white paper, company literature, etc.). Relevance of the sources was jointly assessed by academics and practitioners which contributed to the likelihood that research would be found useful (Mohrman, 2001). Qualitative synthesis was employed to collate key scientific contributions (Noblit and Hare, 1988) with the aim of integrating these specialised ideas into the experience held by practitioners to achieve a greater level of understanding (Campbell, Pound et al., 2003).

The findings were *reported* on an ongoing basis as they emerged, first reporting a descriptive analysis of the literature and progressively the thematic synthesis (Tranfield, Denyer et al., 2003). This facilitated a continuous process of testing and refinement of findings as minimising interpretive barriers (Dougherty, 1992) that may hinder the application and development of knowledge. Interpreting the findings jointly was thought to be an important part of the co-production process as it facilitates potential use of the research (Mohrman, Gibson et al., 2001). On occasions the need to make sense and understand the findings, particularly on the days before presenting them to clients, created some tension and anxiety in the projects. This conflict, despite the friction caused was, in hindsight, seen as positive, as it helped focus the process. By contrast, in the PPP project, the collective sense-making and testing of relevance of the emerging research findings was eclipsed by group dynamics that precluded the joint generation of relevant and interesting outputs from research.

The last stage of the co-production approach, *utilising the findings,* was seen as the culmination of the research process and the initiation of the development process. In particular, in the case of the HRO project, the dissemination of findings through internal and external events preceded the development of diagnostic tools and implementation guidelines that were used in a 'real life' intervention with a key client. In the case of the PPP project, the research team invited practitioners to give their views on the proposed outputs. Practitioners' views were incorporated into a report offering some guidelines on how to manage PPPs. The more proactively the findings were disseminated, the more awareness they raised and a higher level of learning was reported. Overall, the aim was to help other organisational members develop new understandings of the research phenomenon (Tranfield, Denyer et al., 2004b p. 384-85).

The process reported here was developed being sensitive to the social nature of learning and knowledge processes. Emphasis was placed on creating contexts where the

research was conducted as a joint endeavour and aiming to understand each other and take each other's purposes into account as much as possible (Mohrman, 2001 p.61).

Overall, the co-production approach to management knowledge (Tranfield, Denyer et al., 2004b) in which academics and consultants worked together to *blend the best available evidence* on a topic with *practitioner experience* was highly regarded. As a Project Director commented,

> "the ability to do all that research and that hunger for knowledge with our need for something to come out the other end which is practical, is a very *powerful combination*" (H11, Project director - Highways-, 08/02/2006).

Talking about this approach the Director of Strategic Consulting recognised that "*the combined thinking* of people that are sort of practitioners with academics *is the strength*" (H8, 27/08/2003). The co-director of the MC Centre also thought that the co-production process was a good mechanism to carry out the MC Centre research programme.

> "I think that the process we've now got on the other forums [projects] is much better because it's got a planned approach, a sequence of events... The work you've done for that, gives us a good process now for these new subject areas, I'm very optimistic about that." (A2, Managing Director Management Consultancy, 04/08/2003).

The co-production approach places an emphasis on the process by which *research is jointly interpreted and discussed*. In these discussions, according to the Non Executive Director "you end up with something that is more than the sum of its parts" (A3, 04/08/2004). These discussions were described as "extremely interesting" (H10), "good stuff because it stimulated our ideas" (H8), "very constructive" (P20) and overall 'valuable' by the majority of interviewees.

> "Step by step you're starting to build up, if you like, a very detailed, well argued research programme and the process I've sat in with you on a number of these now, every time we've done it we've come out with something that is really good (A3, Non Executive Director", 02/03/2004).

The way the academic and the consulting teams work together within the MC Centre was characterised by relatively frequent interactions. The findings from academic research were always 'presented' and 'discussed' on an ongoing basis. Only towards the end of projects were research findings 'packed' and 'posted' in the form of reports, tables, and other repositories of written material. Interim findings were disseminated internally, for instance using an intranet system called the 'Blue Box', but with limited success.

> "And people don't take up … they don't read passive stuff, they don't look into the Internet, look into the Intranet and look into the Blue Box, they just don't do that. It's only when they're confronted by someone in a room and want to talk to you about it, then you start to take notice" (A3, Non Executive Director, 02/03/2004).

In this case, the reports were regarded as important means of distributing knowledge throughout the company. Discussing the contents of the reports and *jointly interpreting their findings* was found to be more effective than just asking people to read documents.

> "No, I think people do learn more or better from interactive discussions than from reading reports; in general, I think they do. I read very little and that's part of the problem, that for most of us we struggle to keep up with the amount of documents even with the email world…" (P19, Managing Director Local Government Services, 20/12/2004).

At the level of the MC Centre, the last enabler related to 'practices' was the perception of *specific benefits* derived from the use research. For instance, consultants were eager to engage in the research programme when they could see tangible benefits or tangible potential benefits of its use. MCompany referred to the MC Centre and its research programme in a bid for a large contract for the Department for Environment Food and Rural Affairs (DEFRA). In the invitations to bid, DEFRA considered as one of their criteria for preferred bidder research capabilities (A3, Non Executive Director, 02/03/2004). Consultants and project directors used concepts from some of the research projects in bidding processes in roads (P21, Service Director 02/02/2006), highways (H11, Project Director, 08/02/2006), and bundled services (P20, Director of Business Transformation, 23/01/2006).

6.2.2. Unclear purpose

A general emerging theme about the MC Centre was a perceived *lack of clarity of what its purpose was*.

> "The problem in my opinion looking back, do you want to know what our problem was? I think that you, me, the Senior Research Fellow [A7], the Director of AMRC [A6], the Marketing Officer [H8B], the Director of Decision Analytics [AM24], the Researcher Consultant [A4], the Managing Director of Management Consultancy [A2], and a couple of others understood what we were trying to do, the CEO [A1] in particular. And there were other people in the organisation that didn't understand what we were trying to do" (H8, Director of Strategic Consultancy, 13/04/2006).

The mission of the MC Centre was articulated and written, the objectives and the deliverables where thoroughly documented (see chapter 2), enabling the author to locate the aim and objectives of the MC Centre in more that thirty written documents. A three and a five-year research programme was specified, discussed and agreed. An intranet at MCompany and a website hosted in Cranfield were designed and made available online to all MCompany and Cranfield staff. Despite the various places where the mission of the MC Centre was written and despite this mission was presented before at the beginning of all the external dissemination events, *this purpose was not widely understood*.

For some, the MC Centre was a forum to debate and discuss management ideas to develop new knowledge and promote organisational learning (A1, MCompany CEO, 20/08/2003). In so doing MCompany would be in a position to bring about 'thought leadership' a concept often mentioned but rarely specifically defined.

> "Yes I would have thought that the purpose of thought leadership is not to produce a single piece of work, stick that on the intranet, issue hard copies, it's really to have an ongoing debate, provided there's enough mileage" (H10, Managing Director Rail, 13/02/2003).

The extent to which the precise purpose and outcomes of the Centre were difficult to specify is illustrated by the following episode. On the 21st October 2002 a meeting was called and '*Outputs/Deliverables for the Centre – discussion*' was the first item of the agenda. In total, 18 people were invited and 5 apologised for their absence: The CEO (A1), the later appointed MC Centre Coordinator (A5), the Managing Director Rail (H10), the Managing Director of Government Services (P19) and the Company Finance Director. The agenda also contained other items such as: 'Implementation Paper – Action Plan', 'Research methods – end products', 'Role and Job Spec for M-C Researcher' (Agenda Steering Group meeting 21/10/2002). In my field notes I wrote:

> The Director Strategic Consultancy facilitates the meeting, taking notes of the comments on flipcharts that are posted on the wall. He argues that from a MCompany point of view, the content of the themes [research projects] must be provocative, stimulating and of commercial value (2002 10 21 Field notes Steering Group Meeting).

For more than 50 minutes after that comment, the following concepts were generally discussed and put forward by specific individuals (attributed) in relation to the purpose of the MC Centre: "build the knowledge base" and "generate proposition for clients" (H8), "insights to make the business grow – we are not a charity" (H9), "is the Centre a means to funnel ideas or to push ideas generation?" "Developing different mindsets for different interventions and project's design", "the identification of classes of problems and the drive looking for classes of interventions" (A6), "the seek for best practice" (H8), "going beyond best practice and search for technological rules and thought leadership" (A6). The discussion was rich and insightful but the group found it difficult to name a specific output that the Centre should deliver. The director of AMRC and Co-director of the MC Centre (A6) listed the expected outcomes of the Centre as belonging to any of the following:

- Product Development: consultancy offerings and solutions to particular managerial issues.

- Management development: the professional growth of MCompany's executives and consultants, the advancement of their knowledge and the enhancement of their learning.

- Brand development: the production of articles, news, columns, conference papers, reports and other types of publications and the organisation of events, both to disseminate ideas to promote MCompany's image as a 'thought leading' company in its chosen markets.

During the interviews, only one interviewee of the 29, the Director of the Cranfield AMRC (A6) referred to the outputs of the MC Centre in terms of 'product', 'management' and 'brand' development. At the meeting on the 21st October 2002 the Director of Strategic Consulting asked:

> Would someone disagree with this? The purpose of the centre is 'thought leadership' to make us famous and rich by: Product Development, Management development and Brand development and Market Development (2002 10 21 Field notes Steering Group Meeting).

In response, no one disagreed.

6.2.3. Undefined outputs

Another hindering practice was the *unclear definition of outputs and the lack of precise definition of research exploitation mechanisms* for the MC Centre. The perceived lack of 'tangible' outputs from the research programme was an issue often debated, which was thought to have contributed to the demise and closure of the MC Centre.

> "A2 and I [A3] tried to convince the new management that this [the MC Centre] was
> worth doing and they said they couldn't see any bottom line. Money going out and
> no tangible benefits coming in" (A3, Non Executive Director & Visiting Professor,
> 24/01/2006).

Various interviewees acknowledged that the MC Centre lacked a *collectively shared understanding of the purpose*. The Cranfield co-director of the MC Centre perceived that,

> "They [MCompany consultants] didn't have the clarity or objective around what that
> return might be and certainly no agreed performance ratios and what therefore
> constitutes success" (A6, Director of AMRC, 14/03/2006).

For instance, at the start of the PPP project it was believed that one of the outputs from that project was going to be a 'toolkit' outlining MCompany's approach to partnerships to be used in the company's dealings with clients and for training purposes (A2, MDMC & Co-director MC Centre 04/08/2003). The idea of the toolkit was dismissed half way through the project (Actions PPP Research Forum EC 07/10/2003). It was suggested to liaise with the Human Resources (HR) department and its training section to benefit from the work being done at the MC Centre. No one from HR got ever involved in the MC Centre, "no they didn't and that was a horrible thing" (P20, Director of Business Development, 20/12/2004).

After a meeting the Managing Director of Management Consultancy said,

> "I think the ideas and suggestions are there now, I think it's more about delivering
> what we said we're going to deliver" (A2, Managing Director of Management
> Consultancy, 04/08/2003).

However the deliverables were not clearly articulated, and if articulated were never fully understood, as the following quote illustrates,

> "I think the barriers were that there was no strategic direction given on what exactly
> they ever wanted out of the Centre, what the expectations were, they were never
> made clear" (A7, Senior Research Fellow, 2006).

In the following section a detailed analysis of the research programme is offered, presenting findings of the repertory grid interviews. The analysis of the content will give the reader an overview of how people perceived the content of each project before analysing each project in turn. A summary table of enabling and hindering practices of the MC Centre is presented.

6.2.4. Insufficient resources

Another barrier to the learning and knowledge processes was *the lack of resources*. The Managing Director of Management Consultancy and Co-director of the MC Centre (A2) recognised that,

> "We had issues about resourcing it … the resources and getting other people involved within the organisation [was the most difficult thing in my role]… No [I could not just appoint people to work for the MC Centre], because there was no budget and no resource, because the organisation was growing at a rate of 20-30-40 compound per annum, therefore, everything was struggling for good resource" (A2, Managing Director of Management Consultancy, 02/02/2006).

Finding people to commit the necessary time to the Centre and to become engaged in developing the research agenda of the MC Centre was always very difficult. The Non - Executive Director who later became a visiting professor at Cranfield acknowledged that "the Director of AMRC [A6] and MCompany CEO [A1] had a long discussion and it was all [the lack of resources and people's involvement] recognised" (A3, 04/07/2003). In that interview, the Non-Executive Director confirmed that lack of resources was the most important block to knowledge development in the MC Centre.

There was always a preoccupation about the resources made available to the running of the centre. Among the activities planned for the MC Centre in its head of terms, it was specified to "attract research funding from a range of sources" (2001 01 11 Heads of terms MC Centre). The Director of Research (A6) and the Senior Research Fellow (A7) secured funding in excess of £112,000 from one of the Research Council's for a two-year research grant to develop a methodology for evidence-informed management knowledge using systematic review. MCompany agreed to become the principal collaborator in the grant, contributing 'in kind' (staff time) to a budgeted sum of £338,000 (EPSRC bid document June 2002). This funding provided a solid foundation for the research projects.

The aim of the grant was to develop a field-tested and grounded prototype methodology for generating and utilising research evidence in the management field. The MC Centre meeting held on the 21st October 2002 was important because the approach of these projects was communicated. On that meeting the Managing Director of Management Consultancy and Co-director of the MC Centre (A2) explained the approach and phases to be followed on the 'evidence-informed knowledge' projects. He raised two important questions: first, who should be part of the project teams and what should be the focus of the projects? After some discussion he clarified,

> "It is not about what we do but how we make it happen (A2, Managing Director of Management Consultancy, 21/10/2006).

Following, the Marketing Officer (H8B) raised the question,

> "If within the scope of the projects it is planned that some papers for practitioner journals are written, who is going to do the task of writing?" (H8B, Marketing Officer, 21/10/2006).

> "That's right, that's where I come from" (A2, Managing Director of Management Consultancy, 21/10/2006).

Despite the Research Council's funding secured by Cranfield, the significance of the 'thought leading' research programme, the extraordinary growth of MCompany and initial valued outcomes from MC Centre work, the level of resourcing never went beyond the amount specified in the agreement: £40,000 per year and the secondment of a full time research consultant (A4). The CEO graphically explained that,

> "HRO is a prime example of something that appears to be hitting the buttons with both sides [MCompany and Cranfield] and I think that the more that we can make them coincident, the more resource that everybody will feel confident of injecting into the process. It's never very easy through some sort of blind act of faith to say 'well this is so important that we should have 20 people on this'," (A1, CEO MCompany, 20/08/2003).

Enabling practices in the MC Centre		Hindering practices in the MC Centre	
The co-production approach to management knowledge.	Was considered a useful approach to blend the best available evidence on a topic with practitioner experience.	*Lack of clarity of purpose*	The most salient general emerging theme about the MC Centre was a perceived lack of clarity of what its purpose was.
Joint discussions of research findings.	Practitioners valued opportunities to jointly interpret and discuss the research findings.	*Lack of resources*	Insufficient funding hindered the full and quicker development of the research agenda.
Emphasis on the social distribution of knowledge. Instrumental use of research.	Consultants and executives may have an excess of information, and research in written formats is less likely to attract their attention. The perception of benefits when using research findings for specific purposes enhances its perceived value.	*Lack of precise definition of expected outcomes.*	Lack of performance indicators and deliverables precluded a more effective implementation plan.

Table 6.1 Enabling and hindering practices of the MC Centre. Source: Compiled by author.

6.3. The people at the MC Centre

This section analyses the case study evidence to identify enablers and barriers that affected the Centre at a general level and thus had cross-project implications.

6.3.1. Senior management support and individual ownership

The senior management of MCompany often declared their *support to the MC Centre*. Later on, it will be analysed the extent to which the expressed support translated into more tangible support such as with the allocation of resources.

As described in chapter 2, MCompany was very successful in turning its business from a position of debt to a fast growing profitable business. The foundation of the MC Centre was part of the medium-long term aim of becoming a 'thought leading' organisation that delivered high-value added services. This vision was inspired by the Non Executive Director and then Visiting Professor at Cranfield (A3), and the Chief Executive Officer (A1). In addition, three operations directors were involved as project sponsors (the Managing Director Management Consultancy – A2, the Managing Director Government Services – P19, and the Managing Director of Rail – H11).

The Non Executive Director (A3), the intellectual architect of the MC Centre, recognised that the underpinning key for the MC Centre was,

> "Firstly, it's a willingness of the management, and I suppose I could include myself in that, to accept or even promote, that in order to be a successful company you've always got to be thinking ahead." (A3, Non Executive Director, 4/08/2003).

6.3.2. Intrinsic motivations and incentives

Another element that facilitated knowledge and learning processes within MCompany *was a varied set of individual's incentives to become* involved with the centre. In the interviews people were asked about their own motivations to participate in the MC Centre initiatives. They were also asked to comment on what they thought were the motivations of other significant people. The table below summarises the answers, distinguishing between Cranfield and MCompany staff. This is not meant to provide any quantitative analysis of respondent's accounts. It simply aims to provide an overview of the nature of incentives that people perceived significant and that were mentioned in the interviews.

Motivations of MCompany executives and consultants	Mentions	Motivations of Cranfield academics	Mentions
Achievement and personal interest	14	Funding and money	4
Intellectual stimulation and new ideas	14	Achieving good outcomes	3
Profile and reputation within MCompany	10	Working with industry	2
Career development	6	To test the co-production model	2
Enjoyment and team work	5	Completing a doctorate	2
Creating thought leadership	2	Furthering knowledge	2
Bringing research and practice together	2	Interest in the topic	1
Generate business	2	Career development	1
Financial rewards	2	Profile	1
Enhanced brand before the floatation	2	Academic reputation	1
Passion for presenting new ideas	1		
Strong belief in the concept	1		
Potential commercial benefits	1		

Table 6.2 Motivations of people to become involved in the MC Centre.

A glance at the table shows that intrinsic incentives predominate within MCompany's executives and consultants. When asked about their motivations they mostly referred to their personal interest (in terms of making the vision of the centre happen) and the intellectual value of the discussions. People perceived that the Cranfield academics were mostly motivated by more 'pragmatic' factors such as the ones mentioned above. In order to ascertain whether people were in receipt of financial rewards in relation to the research programme one respondent stated,

> [Author: So there was no bonus attached to the delivery of the project?] A2: "No, no, no. The bonuses were attached to things like profit and sales, not to this." (A2, Managing Director Management Consultancy, 02/02/2006).

6.3.3. Academic-consulting stereotypes

The collaboration between MCompany and Cranfield started on a foundation characterised by a mutual desire to cooperate.

"One of the reasons I was attracted to Cranfield as opposed to another academic
institution was the willingness, in fact the eagerness of the Cranfield academics to
work with us." (A3, Non Executive Director, 24/01/2006).

Despite this will, some consultants had *a stereotyped perception of the academic world*.
The research consultant was the person whose role was to make the link between
Cranfield and MCompany. In that role, he used to come to Cranfield School of
Management occasionally for coordination and research purposes. Thus, he had a
closer contact with the Cranfield team than the rest of consultants. In his account
referring to the overall atmosphere of the collaboration towards the end of the MC
Centre, he claimed that,

"Academia looks at business and says 'you're not thinking about things enough,
you're wrapped up in the doing, you haven't got your head up and you're not
looking at strategic issues' … and then business in return says 'well you academics,
all you're doing is studying bits and pieces, you're looking up in to the air, you're
not down on the ground, you can sit there in your nice little room and write up all
these papers but it actually doesn't mean anything to me on the shop floor and that's
almost the situation we got into by the end'." (A4, Researcher Consultant,
20/03/2006).

The following statement is illustrative and revealing about the stereotyped view of
academics. It was made by the project leader of the HRO project (H8) in trying to
explain why some of the tensions within that project emerged.

"I think sometimes there is tension… I think the tension is there for two reasons:
one is because of differing objectives, and the second frustration is to do with timing
and resourcing and how we get things done, you wanted to see me about this, me not
being available, we're probably expecting Cranfield to jump when we say jump
because *we don't think you've got proper jobs"* (H8, Director of Strategic
Consultancy, 27/08/2003) (Emphasis added).

6.3.4. Lack of internal cohesion

Another barrier that was acknowledged in the course of the research programme was a
perceived *lack of cohesion* amongst some key people. For instance, the centre was co-
directed by the Managing Director of Management Consultancy (A2) and the Director
of AMRC (A6). Their relationship was not cohesive enough to address some of the
challenges of managing collaboration between two rather different organisations such a
School of Management and a consulting provider.

"Probably [my relationship with A6 was] not close enough to get this job done
really. I am assuming we did OK personally, but I don't know if he has a different
view on that. I think that probably we didn't work together often enough to have a
common objective" (A6, Managing Director of Management Consultancy,
02/02/2006).

Similarly, the co-director of the MC Centre from Cranfield perceived lack of cohesion
in pushing the collaboration forward,

"The Managing Director of Management Consultancy (A6), is just playing at
politics, I don't think there's a real commitment from MCompany, so not very
effective really." (A6, Director AMRC, 14/03/2006).

Overall, the relationships among the individuals were characterised by a mixture of praise and criticism. The lack of sufficient smooth relationships across the collaboration hindered knowledge development and learning. The differences in people's assessments of each other varied significantly from individual to individual. The following table illustrates the disparity between these assessments. These comments were obtained in interviews with participants in the projects and the MC Centre Steering Committee. The quotes are not attributed to ensure anonymity, given the sensitivity of some comments. Only the person that the quote refers to is identified in the first column.

Person	Praise	Criticisms
A4, Research Consultant.	"A4 right now, I think he's a really able, positive, enthusiastic guy, very bright" "Tremendous enthusiasm, a lot of intellectual horse power, very good" "My view is that if A4 had not been there [in the PPP project] they wouldn't have got to the dinner … I think A4 was probably instrumental in getting PPP working".	"And A4 was completely ineffective and completely lacking any influence other than pissing me off". "A4 played quite a political game as A4 always does, he's a very political person and he played a very political game to make sure he was well positioned" "A4 just not delivering at all" "I don't think he was acting as a good conduit between the two organisations" "A4 [who] was a complete bloody waste of space"
A5, MC Centre coordinator 2003.	"I thought both of them (A4 & A5) were really good nice people; I thought they were both very able"	"I don't think there was one output from anything that he (A5) did… delivered very little for the whole period that he was involved"
AM24, Project leader AssM.	"AM24 is good, one of our best management consultants"	"I don't think he was really motivated … completely ineffective"
H8, Project leader HRO.	"I liked H8 I thought he was very get up and go, entrepreneurial" "I thought H8 was a very, very clever lad and he was a brilliant presenter"	"A bit arrogant and he talked down to people and he got up peoples noses and it made people switch off" "H8 came across as someone who was quite arrogant and quite opinionated"
A6, Director AMRC.	"I think A6 was effective in setting up the Centre and in trying to raise some awareness through the dinners, and was supportive"	"A6 is quite brusque and is quite, you know this is the way it should be done, and he does come off a little bit like you're all stupid and you've all got your heads in the trenches" "I just see him as being a very political animal"
A7, Senior Research Fellow.	"A lot of that [the outputs achieved] was because A7 moved over to Cranfield. A7 was terrific, I mean absolutely shit hot; I really rate A7 very highly" "Well I thought A7 and you were excellent". "I think that the team worked well. I think that it was helped a lot by A7's relationship"	"A7... not particularly effective, some great thinking and great on the ground. Did he see his role as creating greater links into the organisation? No. Was there any contribution in meetings where there were more senior guys involved? No.

Table 6.3 Praise and criticisms amongst people within the MC Centre.

This table of comments evidences that quality of relationships varied enormously from people to people and overall, the MCompany–Cranfield was not characterised by easy relationships. Some degree of mutual disagreement between two people is reasonable and to some extent likely to occur in novel projects such as the ones studied in this thesis. The comments in the table above, suggest that some fundamental misunderstanding underpinned the relationships within the MC Centre.

6.3.5. Perceived diverging objectives

One of these fundamental problems was the *perception of having different objectives and a lack of mutual understanding.* The Managing Director of Management Consultancy recognised that one of the blocks to learning within the MCompany and Cranfield collaboration was "the slightly different objectives of both organisations" (A2, 04/08/2003). People perceived that "there was an inherent conflict of objectives between the academic side and the industry side." (AM24, Director Decision Analytics).

The potential differences between some of the objectives of the two organisations were to some extent expected. In the initial agreement between Cranfield and MCompany, it was specified that:

> MCompany acknowledges and agrees that Cranfield employees will be required to further Cranfield's academic mission of advancing knowledge (MCompany-Cranfield agreement 01/04/2001 MCompany-Cranfield agreement, p.2).

And equally,

> Cranfield acknowledges and agrees that MCompany employees will be required to further MCompany's commercial activities and undertakes to collaborate reasonably with MCompany in the furtherance of their specific aims. (MCompany–Cranfield agreement 01/04/2001 MCompany-Cranfield agreement, p.2).

These different (and both legitimate) objectives of the two organisations, were perceived amongst the participants in the projects. However, the necessary arrangements to exploit the differences between the two organisations in mutually beneficial ways were not fully defined and implemented.

> "To answer your question to what extent were we aligned, I don't think on that dimension it was even revealed let alone aligned" (A6, Director AMRC, 14/03/2006).

The Managing Director of Government Services was a person heavily involved in the MC Centre, particularly the PPP project. He also had long experience in managing partnerships between rather different organisations, such as public bodies and private service providers. His view on the understanding and sharing of mutual objectives was well informed. In relation to this, he argued that,

> "These things [agreements such as the MCompany–Cranfield] don't work because the agendas of the two organisations are very different." (P19, Managing Director of Government Services, 16/01/2006).

In addition to having different objectives, it was perceived that effective mechanisms to resolve conflicting aims were either not identified nor put into practice. Interview data revealed that participants acknowledged an *insufficient effort to reconcile positions* and agree a mutual direction.

> "I think that if Cranfield and MCompany had sat down together and properly talked about what they wanted to get out of the arrangement, they would have done a lot better. I don't think that either part of the arrangement truly tried hard enough to appreciate the other's viewpoint." (H12, Director of Business Transformation, 09/03/2006).

A divide and lack of mutual understanding was perceived between Cranfield and MCompany, but also acknowledged *within MCompany* between Management Consulting and the rest of the company. H13 recognised that "people worked in silos in MCompany" (H13, 2006) and this separation particularly affected Management Consultancy. As the Research Consultant recognised when asked about the level of influence of Strategic Consultancy had across the business, he replied,

> "In what way was management consultancy ever embraced by the business? It
> wasn't … so that's an automatic barrier." (A4, Researcher Consultant, 20/03/2006).

The Research Consultant was the person in charge of managing and nurturing the MCompany–Cranfield collaboration on a day-to-day basis. This required influencing people within MCompany to contribute to the development of the MC Centre's research program. Prior to him, the Marketing Manager was tasked with managing the relationship for a period of six months. When asked what he found the most difficult relationships to manage his answer was:

> "To manage? MCompany. You guys [Cranfield academics] were easy" (A5,
> Marketing Manager, 20/01/2006)

6.3.6. MCompany's Management Consultancy culture and climate

The work carried out at the MC Centre, focused on innovative managerial thinking, clashed with their *very strong engineering 'culture'* (H15, Senior Consultant 2006). The overall company culture was less supportive of creating new knowledge through collaboration than most interviewees thought necessary:

> "I thought they [H8, A4, A6] worked very hard, it was like throwing marshmallows
> into the wind you know, it was really, really difficult to get it a long way because of
> the things that were trying to stop them, the inertia, the apathy and the cynicism
> were quite strong [in other parts of the business], that's what I sensed." (H13,
> Director of Local Government Services, 15/02/2006).

During the period of this study, MCompany was *strongly focused on profits and turnover.* (MCompany prospectus 25/09/2002; MP corporate plan 2004 01/01/2004; see also chapter 2 for details). This emphasis on tangible and quantifiable gains was somehow in conflict with the very nature of the MC Centre. The purpose of the centre was to conduct research in new areas to stimulate learning and to create new knowledge. The results of the research activities could not be precisely anticipated in advance. Similarly, the benefits of management research activities for a management consultancy firm are difficult to quantify in financial terms in advance. Given the nature of the research activities, and that the governing 'mindset' across MCompany was to increase turnover and profit, MCompany staff may have found it difficult to devote the necessary 'effective' (as opposed to just 'affective') resources in terms of time and funding to the MC Centre.

> "But it was all focused on MCompany's profit and loss, it was all 'we're going to
> float, we're going to do this, these are our targets', it was all about that; it wasn't a
> vision thing, there was a lack of business strategising." (H9, Client Manager -
> highways, 09/02/2006).

The following quote captures the struggle to find the necessary fertile context to make the learning from research thrive,

> "I think the hindrance [to knowledge and learning] wasn't with Cranfield, I think the hindrance was with MCompany because we are a very lean organisation and one of those concepts you had there was …there's no slack, there's no spare capacity, we are growing but we're only ever just able to keep up with the back growth and that's why I was never available to be fully engaged in it." (P21, Service Director – highways, 02/02/2006).

The last key barriers related to 'people' were the *lack of delivery* of specific individuals and the lack of *continuity* of some MCompany staff. It was a 'fact' that some key people at the MC Centre left the company. However, in the interviews, informants revealed stories that provided rich contextual information of the circumstances that surrounded those departures.

The first significant person to leave the centre was the Managing Director of Management Consulting and co-director of the MC Centre (A2), who left in December 2004. He was jointly responsible (with the Director from Cranfield) for articulating the direction of the MC Centre. As head of Management Consultancy, his leadership was questioned (some of the quotes to evidence this claim are not attributed given their nature).

> "I think so to be honest, the Director of Management Consultancy from our end was not regarded as a particularly good manager, he's a nice bloke but in certain areas he was very effective I don't think he had a particularly strong grasp of the concepts from our end." (Project Director).

The Managing Director of Management Consulting (A2) was described by MCompany consultants with comments such as the following: "one of those mild-mannered type characters", "not terribly effective", "a very nice man to talk to but as a leader of an organisation I thought he was last", "not very clear about the specific objectives", "I never could see really what he added".

These quotes illuminate one of the possible causes why there was not a widely shared clarity about the aims of the centre and related performance indicators. They may help understand why Management Consultancy was not influential enough within MCompany. Since the MC Centre was hosted by Management Consultancy, the *lack of effective leadership* may have been detrimental to the overall impact of the MC Centre activities across MCompany.

The lack of leadership to the Centre was attributed to pressures to generate income (A4, A5 & AM24) and other constrains from the business. Nevertheless the results were that,

> "He should have been the one managing the Centre and giving it direction from their end and never had a vision".

Another key individual who left was the Research Consultant (A4) in April 2004. This left a vacuum in the running of the Centre that was minimised by working together directly with project leaders. Table 6.3 contains comments from various people about

the Research Consultant that provides a clear overview of how poorly his performance was viewed. The Research Consultant was regarded ineffective and his performance perceived as very poor. Further departures were the Director of Strategic Consultancy (H8) in March 2004, the Director of Decision Analytics (AM24) in January 2004, and the disengagement of the former MCompany CEO (A1) and the non-executive director (A3). This lack of continuity of people was perceived as a significant barrier to the knowledge and learning processes.

Below, is a summary table of the key people enablers and barriers of the MC Centre.

People barriers in the MC Centre		People enablers in the MC Centre	
Senior management support.	Members of the management board of the organisation were key in inspiring and founding the MC Centre.	*Stereotyped perception of the other party.*	Precluded a climate of openness and trust.
Ownership of the projects.	People who became engaged in the project, made most of the outputs.	*Insufficiently cohesive relationships.*	Opened the opportunity for tensions to occur.
Motivations and incentives.	Intrinsic and personal motivations emerged as the key classes of motivations to make the project successful.	*Perceived different objectives & lack of mutual understanding.*	Cranfield and MCompany were perceived as having different objectives. The two organisations did not fully understand each other.
		Lack of effort to get aligned.	Not enough clarity and effort to align the two organisations hindered the capacity to work together effectively.
		Internal divisions within MCompany.	Within MCompany, Management Consultancy did not have a high profile.
		Lack of continuity of people.	Key people associated with the MC Centre left MCompany. Serious underperformance jeopardised the outcomes of the centre.

Table 6.4 Enablers and barriers in the people of the MC Centre overall research programme. Compiled by author.

6.4. The closure of the MC Centre

After a few months of discussion between the director of AMRC (A6) and MCompany's CEO (A1B) in October 2004, the MCompany decided to terminate the collaborative arrangements of the MC Centre. Both Cranfield and MCompany left the door open to future collaboration on a project-by-project basis. The annual fixed financial contribution ceased and the MCompany stated that any future research initiatives would be funded individually, rather than as a yearly contribution. The reasons that led to the closure of the MC Centre, according to the CEO (A1B), was a perception that it had failed to achieve its intended outcomes.:

> "The reason it failed was that after a succession of things, that perhaps quite a few good things happened but a lot of things went wrong and in the end there was just too much baggage to sort of feel that we could revive it… so in the end in October 2004 we agreed to call it a day." (A1B, Chief Executive MCompany, 08/08/2006).

Throughout the chapter various important enablers and barriers have been described. Apparently, the enablers and perceived potential benefits of the MC Centre were not sufficient to counterbalance the effects of the barriers. The following final remarks of the chapter point to some important issues in relation to the decision to close the MC Centre.

The statement of the Managing Director for Government Services and PPP project sponsor is a matter of concern, as it questions whether the MC Centre was at all viable.

> "If your business is about making drugs, and you've come from a science base, it's probably much easier to always be able to justify that [the MCC effort], and value it … If you're in the business of selling services and you generate your knowledge through the delivery of your service, so why go out and pay to add to your knowledge when you're learning when you go all the time? That's more difficult to do". (P19, Managing Director of Government Services, 20/12/2004).

Despite this query, the MC Centre enjoyed good support from most of the management board. The co-director of the Centre argued that "the prize for both Cranfield and MCompany of being able to demonstrate how a centre like this works…is so great.". (A2, Managing Director Management Consultancy, 04/08/2003). The initiator of the MC Centre was convinced that the MC Centre was a valuable initiative however difficult it was to measure its value. In the middle of the expansion period he claimed,

> "I probably have the only perspective across all the groups and I'm the only one who's sat in on all of them. They are definitely meeting a need, and they are developing some really good ideas." (A3, Non executive director, 04/08/2003).

Even after the Centre closed, and some consultants who were much involved had left the company, the perception was that the MC Centre had been a positive initiative. This positive perception was explored by asking interviewees whether they would do it again, to which the Director of Strategic Consultancy and project leader of HRO said,

> "HRO and MCompany–Cranfield, if someone said to me 'would you like to be part of it again?', absolutely, totally, yes, no doubt about it, in that environment, I think it was a superb way of developing ideas and bringing them to the market-place, absolutely superb. I think it was great (H8, Director of Strategic Consultancy, 12/05/2006).

This feeling is shared by both the Managing Director Government Services – project sponsor who claimed:

> "The only thing I would say is that I'm really pleased we've done it [the PPP project]. From a personal point of view, I would very much like us to continue with all the projects we're working on." (P19 Managing Director Government Services, 20/12/2004).

The benefits were never questioned:

> "So I think we had a … there's a bit of a missed opportunity there and for future projects I think there's lots more scope for heightening the profile of both organisations." (P20, Director Business Development 20/12/2004).

Even the CEO of MCompany who made the decision to close the centre still was of the idea that:

> "The whole concept of thought leadership and innovation and being at the forefront of new developments in any of our markets is still what we want to do, and a tie up between us and an academic organisation with high profile and high standing, still sits very well with what we'd like to do; but we just couldn't get it to work in this case I think." (A1B, Chief Executive, 08/08/2006)

The comment that encapsulates it all comes from the co-director who claimed:

> "So part of the problem for everybody was that it was a "nice to have" and something we would like to do, but we didn't have time to do it." (A2, Managing Director of Management Consultancy, 02/02/2006).

6.5. Summary

This chapter has outlined some of the enablers and barriers that affected the collaboration between MCompany and Cranfield at a general level (i.e. not project specific). It has been argued that the difficulty encountered in defining the scope and focus of the content of the programme hindered learning processes. However that difficulty in the content was different across the projects.

The analysis of the practices revealed that overall, the co-production approach to management knowledge was perceived as an appropriate vehicle to blend theory and practice in mutually productive ways. The unclear definition of expected outcomes and ways of measuring them, coupled with lack of resources precluded a full realisation of learning.

Finally, the data suggest that latent conflicts and misunderstandings within Management Consultancy and between MCompany and Cranfield precluded a more fertile learning environment. The perceived support of the senior management of the company was not enough to resolve the reported differences between the two organisations.

Although this analysis provides a valuable contextual analysis, exploring enablers and barriers at the level of the MC Centre does not explain why some projects succeeded and others failed in achieving their intended learning and knowledge outcomes. The next chapter will analyse each project in turn. The analysis will focus on distilling the specific aspects of the 'content', 'practices' and 'people' of each project to understand 'how' they achieved such disparate results.

7. FINDINGS: ANALYSIS OF THE RESEARCH PROJECTS

7.1. Introduction

The aim of this chapter is to report the findings of each of the research projects. What follows is a detailed inductive exploration of the content, the practices and the people of the five research projects. The conceptual framework 'content', 'people' and 'practices' derived from the systematic review (chapter 4) is used to guide the analysis and to provide a structure for the chapter. In this chapter, all the case study evidence[1] is analysed in search of "plausible explanations" (Patton, 2002 p. 90) for the enablers and barriers to learning and knowledge processes in each of the research projects.

In order to facilitate the analysis, the enablers and barriers are separated into different sub-sections as much as possible. However, in describing the findings some enablers and barriers may become intertwined. In order to aid the reading of the findings, key enablers and barriers are *italicised* and a summary table provided at the end of each 'content', 'practices' and 'people' sub-sections. These tables provide tabulated data to facilitate an audit trial for the cross-case comparison in the next chapter.

7.2. Project 1. High Reliability Organisation

7.2.1. Overview

As presented in chapter 2, High Reliability Organisations (HRO) was the best regarded research projects of all, according to the majority of informants (2004 03 01 Key Lessons Learnt). The aim of the HRO project was to understand the characteristics of high reliability organisations, that enable them to trap, avoid and mitigate against failure (see chapter 2 for more details). Research findings were presented at more than eight events, both internally and with external clients. Outputs from the HRO research appeared in a newspaper column and three professional articles, one of them online. It was also used in two published academic papers and six conference papers (Outputs list as at June 2005 21/06/2005).

The HRO theme was considered both interesting and relevant by the majority of participants in the projects and its events. HRO concepts were used in bids for contracts and high reliability principles were applied in an intervention with a client organisation.

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[1] Throughout the chapter, reference is made to the documentary evidence that supports the claim. The format used is (<document name or file name>, <date>). The file name often contains the date the document was created. Details of each document can be found in Appendix C: Table of Documents.

At the time of writing, a full-scale implementation of a high reliability change programme across the entire company has been confirmed.

The project was enthusiastically led within MCompany by the Director of Strategic Consultancy, a consultant described by his peers as someone innovative who has very good ideas. This enthusiasm contrasted with the approach to run the project. Rather than a planned method, the high reliability initiative was managed in a way that could be defined as 'opportunistic'. In the following sub-sections the project is analysed in more detail starting with an account of the 'practices', followed by 'content' and 'people'.

7.2.2. The content of the HRO project

This sub-section addresses how actors involved in the project perceived the content of the subject matter. These findings are primarily based on interview and documentary data and complement the repertory grid data. Repertory grid data provided limited explanation as to 'why HRO was perceived by most actors as interesting' or 'how consultants construed relevance'. These issues are addressed in the next sub-section.

7.2.2.1. *Why HRO was perceived to be interesting*

High reliability organisation design was *perceived as an interesting topic* by the majority of the interviewees as the following quotes illustrate:

> "There's something in this but I think potentially there was something very, very interesting". (H10, Managing Director Rail-, 13/02/2006).

> "Certainly HRO produced some interesting ideas" (H12, Director of Business Transformation, 09/03/2006).

> "I think it's conceptually very interesting" (A3, Non Executive Director, 04/08/2003).

> "It's an interesting subject matter" (A4, Researcher Consultant, 02/03/2004).

People within MCompany primarily knew about HRO through the events and presentations that the Director of Strategic Consultancy and project leader (H8) organised. H8 managed to present a set of propositions that attracted interest, and found HRO interesting himself.

> "The AMRC Director introduced the concepts of HRO and then when we went to meetings and talked about it, me in particular and other people also said, *that's really interesting and I don't understand it, so let's go and do some more research* on it" (H8, Director of Strategic Consultancy, 27/08/2003) (Emphasis added).

The italicised segment of the quote is itself interesting. The project leader felt *intellectually stimulated* arguing that HRO "should raise more questions than it could ever answer (H8, Director of Strategic Consultancy, 27/08/2003; HRO field notes Meeting 4 18/10/2002). This is unsurprising since some of these puzzles have attracted much scholarly debate where HROs have been seen to be "working in practice but not in theory" (La Porte and Consolini, 1991 p.19).

The subject content of high reliability organisations is "particularly interesting because it was different and unique" (H8, Director of Strategic Consultancy, 27/08/2003) and "people just get fascinated by it" (H8B, Marketing Officer, 12/04/2006). The project meetings triggered insightful discussions around a number of key concepts such as redundancy ("redundancy was a big issue" – H9, Client Manager – Highways, 09/02/2006), zero tolerance ("yes we had a big debate over what zero tolerance meant and that was good stuff because it stimulated our ideas" – H8, Director of Strategic Consultancy, 12/04/2006) or the notion of failure free ("you need to have that bit of the business failure free" – P21, Service Director – Highways, 20/02/2006). From discussions around the notion of failure free, it was concluded that not every organisation can afford to ensure reliability in every part of their operations. Thus, it was suggested that organisations should ensure reliability in their core and sovereign parts of the business.

HRO ideas easily captured the attention of MCompany's consultants. Even people who had not previously been involved in the development and refinement of the project found its content *"fascinating* stuff, where did this come from?" (A3, Non executive director, 24/01/2006 – Emphasis reflects the stress in the interview). Overall, consultants found the HRO theme very attractive.

> "I think it was, I can't think of another word, so I'll use sexy, I think it's a sexy topic
> … to be shown that there is a whole different world out there that you could be part
> of, I think that's probably what's exciting." (H8B, Marketing Officer, 12/04/2006).

In trying to understand why HRO was perceived as interesting, particularly by MCompany consultants, the interview data revealed that this project *offered new perspectives* in a number of ways. First, it provided a new opportunity for learning *from a different sector*.

> "It was a good perspective, it was a new perspective that's why it had value, it was a
> great perspective, it was taking some learning from a different sector, a different
> industry and we had the opportunity to apply it to local government" (H16, Senior
> Consultant – LG Services, 13/03/2006).

Trying to unpack the meaning of 'new perspectives' in this context, it was found that HRO was seen as *"a new way to analyse business performance"* (H8, Director of Strategic Consultancy, 12/07/2006), or as the Marketing Officer put it "a whole step change in the way you see your own organisation" (H8B, Marketing Officer, 12/04/2006). HRO research was considered "insightful" because it "gave a lot of new perspectives on ways in which to look at things, specifically in terms of changing attitudes towards business performance" (A4, Research Consultant, 02/03/2003). HRO research findings were perceived to be "catchy" since they "could help understand some of the problems, or some of the reasons why organisations were successful" (H8, Director of Strategic Consultancy, 27/08/2003).

Tools developed from HRO research were perceived particularly useful for the assessment of "procedures, processes and systems" in their client organisations (H18, 12/07/2006). Overall, the HRO dimensions synthesised from research were found to provide a compelling approach to analyse an organisation.

> "Benchmarking and best practice is, it doesn't tell you anything about your business,
> it only tells you what your objective is, whereas HRO allows you to question the
> business" (H8, Director of Strategic Consultancy, 27/08/2003).

HRO thinking provided ideas that were sufficiently close to individuals' experience and knowledge to be comprehensible but sufficiently different to offer new insights (A6, Director of AMRC, 14/03/2006). HRO findings enabled the reconfiguration of ideas that people already had in a different way (P21, Service Director – Highways, 02/02/2006). In general, the HRO project was considered *novel*. It was the project that "drew the largest numbers of novel conclusions from the research". (H12, Director of Business Transformation, 09/03/2006). The project leader argued "novelty is a good word [for HRO], because it's not unique, it's novel" (H8, 27/08/2003). This perception was shared not only among MCompany staff, but also among Cranfield researchers.

> "I think HRO has been successful because I think firstly a reasonable project I think
> it's a novel area" (A7, Senior Research Fellow, 27/03/2006).

7.2.2.2. Why HRO was perceived as a relevant project

A clear distinction between 'interesting' and 'relevant' was not evident from the empirical data. Interviewees often used these two concepts interchangeably in the repertory grid interview and it was over the course of the semi-structured interviews where the concepts 'interesting' and 'relevant' were disentangled. Drawing on the interview data and aided by the observations on the field and documented evidence a differentiation between the two was made. The differences between the two are discussed in the next chapter and implications for the practice of research presented in the conclusion of the thesis. What follows is a detailed construction of what relevant meant in the HRO project.

The dimension that emerged as a clear sign of relevance was that HRO ideas were *applicable to MCompany's clients*. For these clients, an increasingly pressing need was to "provide service that's reliable, that isn't going to come up with some awful incident the day after tomorrow" (A1, MCompany CEO, 20/08/2003). Following some adaptation as indicated in the 'practices' section (section 7.2.3), MCompany staff saw that "there was a role for that [HRO thinking] in local government" (H13, Director LG Services, 15/02/2006), highways (H9, Client Manager – Highways, 09/02/2006), and rail (H10, Managing Director – Rail, 13/02/2006). A large proportion of MCompany's business was in these three sectors (MP Company, Report and Accounts 2005).

Failure-free service delivery was seen as a general and industry-wide need, and particularly applicable in infrastructure-intensive organisations. This general preoccupation, coupled with specific high profile instances of failures in the press at the time, helped convince the Director of H Highways to use HRO principles in a major change programme.

> "I said yes ok we'll *try* a *pilot* here, *maybe* we've got *some money* to spend on it and
> at that time there was no specific need, it was just a feeling I had, perhaps it was
> only me, it would be a really good idea. Almost as soon as I said that, we had a
> major failure and that was a job called City Centre" (H18, Director of 12/07/2006)
> (Emphasis added).

The question of "what does it [the HRO project] mean to us as a company?" was highlighted as a key aspect that needed to be addressed (H8, Director of Strategic Consultancy, 27/08/2003; H14, Client Manager – Rail, 08/02/2006). The HRO project *connected well with* MCompany's *overall business strategy* (A2, Managing Director Management Consultancy, 04/08/2003; MCompany prospectus 25/09/2002) and was part of the research agenda that Cranfield AMRC academics were pursuing.

> "HRO was a very convenient high level thing that was a real grabber for 3 phase X [internal initiative] in relevant markets, it was in sectors that we wanted to be" (AM27, Senior Consultant, 13/02/2003).

On a more individual level, HRO was perceived as being *personally relevant* for people, i.e. *closely related to their jobs*. This was considered critical, as the Managing Director of Management Consultancy recognised: "it's very important that it [the project] fits with somebody's day job (A2, 04/08/2003). Informants recognised that "the point is that you can relate them [HRO principles] to your job" (H18, Director of H Highways). The personally relevant dimension was key in the implementation of HRO in H Highways. The consultant that drove that process recognised that,

> "the concept [HRO] really appealed to me because of my background, because of my research, having done a masters degree" (H15, Senior Consultant LG Services, 12/07/2006).

The interview and documentary evidence revealed another dimension of relevance, the time. High reliability organisation design was perceived *topical* at the time where the research was being conducted.

> "So for example taking the SMoLTA report to British Gas which we did, they said oh yes that's very interesting, thank you very much. Took HRO to them and they said we've got to talk to the board about this, it's a whole different… They shut up immediately because it was relevant, specific, *urgent*, it hit a point in their organisation" (A3, Non executive director 24/01/2006) (Emphasis added).

This perception of topicality was shared both across MCompany and Cranfield AMRC, whose director argued that,

> "the reason why HRO went as far as it did is because it was an idea whose time has come, now that's independent of MCompany or the structure. It's just a good idea and it's a good idea and it's time is here" (A6, MC Centre & AMRC Director).

The combination of relevant and topical findings made the HRO ideas be perceived as having *potential*, (H11, Project Director – Highways, 08/02/2006). Some consultants referred to the HRO project as *sellable* and "a good consultancy tool that would earn us income" (H13 Director of LG Services). Overall HRO was thought to be *usable*,

> "incredibly interesting and certainly something that people can use as an issue area on its own and maybe even to spin off into other areas" (A4, Research Consultant, 02/03/2004).

The last enabler of the 'content' was that the HRO project was perceived as *credible and rigorous*, and backed by good research. The research conducted according to the HRO project sponsor, "gave us a very sound basis for what we wanted to take forward"

(H10, 13/02/2006). The consultants valued the academic research that underpinned the project. It provided them with assurance of the validity of the ideas. However, there was little evidence of real interest in the original studies that comprised the systematic review (Marcos, Denyer et al., 2003a). None of the MCompany staff asked for any of the academic articles that were used in the research. Overall the perception of rigour aided the project outcomes.

> "It's [the HRO research] definitely rigorous, no doubt about that, it is rigorous, both
> in terms of what is found but also the methodology looks rigorous" (H8, Director of
> Strategic Consultancy, 27/08/2003).

The HRO project stimulated ideas and interactions amongst academics, consultants and clients, and was perceived as interesting, relevant and rigorous. However, there were a number of aspects of the HRO content that appeared to hinder the overall project.

The first of these aspects was that *understanding HRO was not easy* as the project leader recognised "that's really interesting and I don't understand it" (H8, 27/08/2003). The words used to synthesise the research into the 'eight characteristics of high reliability organisations' were clear, but what was not so clear was how much these characteristics or mechanisms contributed to failure-free performance. Some confusion was created around the translation of reliability-enhancing mechanisms from high hazard (e.g. nuclear power plants) to low hazard contexts (e.g. local government services).

> "I think there wasn't a terribly clear broader understanding of HRO within
> MCompany … oh no this is all far too expensive and you couldn't possibly apply
> this to a normal organisation, you have to be a nuclear, aircraft carrier or something
> like that" (H10, Managing Director – Rail, 13/02/2006).

The consequence of not understanding the topic in the case of the project leader was an increased interest. He wanted to know more about it and to understand it better, becoming engaged in it. In the next chapter, this instance is discussed in the context of the incentives that different people may have had in relation to the projects.

The research findings were synthesised from secondary data, including both empirical studies and theoretical papers. The project *did not seek to collect field data*, which was believed to be a potential benefit for the outcomes of the project.

> "And the only other thing I'd say about the research was the research tended to be
> from academic sources, there was no supplementary research through what we're
> doing now, through interviews and questionnaires … and I think that's quite
> important" (H8, Director of Strategic Consultancy, 27/08/2003).

Another barrier related to the content of the project was a certain degree of scepticism about whether HRO would work or not in the business context in which MCompany operates. The *unproven previous success* was an issue that emerged relatively early in the course of the project, as a Client Manager from Highways claimed: "I think we needed real evidence of success, we needed opportunities to prove things" (H9, 09/02/2006). Later on when the implementation in H Highways was planned the lack of evidence of effectiveness in related contexts was mentioned.

"Local government is clearly saying well you know, is it a recognisable product, does it work? Can I see some track record to it? It takes a brave person to go down an avenue on an untested product when they're spending public money, that's not an easy sell" (H16, Senior Consultant, 13/03/2006).

Despite the lack of demonstrable success of HRO in local government contexts, the HRO implementation project in H Highways was approved.

Table 7.1 provides a summary of enablers and barriers of the 'content' in the HRO project.

Enablers of content in HRO		Content barriers in HRO	
Perceived to be an interesting topic.	In addition to interesting HRO was also described as fascinating, sexy and exciting, intellectually stimulating, new and novel.	*Not easy to fully understand.*	Adds difficulty to the project but if well-managed may help engagement of people.
Contains key concepts that trigger discussion.	There were aspects (e.g. redundancy, zero tolerance to failure, etc.) that attracted engaged discussions.	*Lack of field data.*	There was no field research which could have potentially added new insights.
Offers new perspectives.	Considered a new approach to analyse business performance and its underpinning mechanisms.	*Unproven previous success.*	For some individuals, track record of effectiveness was thought to be important.
Is a new and compelling way to analyse an organisation	Assess procedures, processes and systems. Helps understand why some organisations are successful and why others fail to attain their mission.		
Perceived to be relevant.	HRO is applicable to MCompany's clients and addresses both general and specific issues that the clients have. It is also related in some way to the individual's sphere of work.		
Topical.	Resonates within a general or sector-specific debate, or addresses a current issue.		
Has potential.	Its potential can be in the form of usable and sellable consultancy tools.		
Credible and rigorous.	Provides a sound basis for future work and eventual implementation.		

Table 7.1 Summary of enablers and barriers of the 'content' of the HRO project. Compiled by author.

7.2.3. The practices in the HRO project

The 'practices' of the HRO project that are described in this sub-section refer to the managerial interventions, procedures and techniques adopted during the course of the project.

HRO was the first research project conducted at the MC Centre after its official foundation in September 2001. The HRO project was linked to one of the findings of the Strategic Management of Long Term Assets (SMoLTA) report: the increasing need, particularly in the UK, for failure-free infrastructure (The MCompany-Cranfield Centre, 2001).

HRO was a developing theme of the Advanced Management Research Centre's (AMRC) research agenda before the MC Centre was inaugurated. In its origins, HRO research was conducted in 'high hazardous' contexts such as aircraft carriers,

submarines, nuclear power plants, and air traffic (Bierly and Spender, 1995; La Porte, 1996; Weick and Roberts, 1993). Research into failure-free organisations has also been applied in educational contexts (Stringfield, 1995).

MCompany became interested in HRO following conversations with academics from Cranfield. Initial informal conversations about HRO developed into an interest to know more about the topic and how HRO could inform the design of failure-free organisations (A3, Non executive director, 24/01/2006). Later, *HRO research was internally disseminated within MCompany* in away days (5&6/12/2001) and *externally* in management conventions (Managers Workshops 22/01/2002 and 25&26/02/2002). HRO particularly attracted the interest of MCompany's Director of Strategic Consultancy (H8, 27/08/2003). A project to explore HRO in more detail was proposed and agreed by MC Centre's Steering Committee (MCC update & work programme Feb2002).

Encouraged by the Director of the AMRC and supported by the Senior Research Fellow at Cranfield the subject area was mapped to identify the size and relevance of the literature (HRO Scoping Study v1.0 12/03/2003). Subsequently a systematic review of the literature was conducted (Marcos, Denyer et al., 2003a). This work was initially produced relatively independently of MCompany. That is, there was no project plan with specific deadlines; this contrasts significantly with the PPP project. The results of this systematic review were subsequently used as the basis for the development of the HRO project and subsequently the HRO audit tool that was applied with one of MCompany's clients.

The HRO project team was not formally appointed and no project plan was ever produced. The project was *opportunistic* in that it was not pre-planned, but instead was managed on an ad hoc basis by the Director of Strategic Consultancy (H8). After summer 2002, H8 decided to organise a 'thought leadership' event in which he arranged to deliver a presentation himself on HRO to key clients. This presentation was followed by a dinner on the 20th November 2002 at the Chesterfield Hotel in London. On the 21st October 2002, after the MC Centre Steering group meeting, the Director of Strategic Consultancy met with the Cranfield team to prepare the content of the presentation for the 20th November (2002 10 21 HRO field notes Meeting 1). Interestingly, the event was organised then, whereas the message was crafted at a much later date. This pattern of setting a date for an event and preparing the material for that event at the last minute was explained by one of the respondents,

> "it is very, very easy in my opinion to put MC Centre work as 2nd priority because other things get in the way, which is why we have to set deadlines and we must set really rigorous deadlines, not in terms of doing a piece of research, but in terms of actually getting out and doing the finished product with the client. If you don't set those deadlines, *if we don't do it, we'll never, ever do anything*" (H8, Director of Strategic Consultancy 27/08/2003) (Emphasis added).

This way of working created tension between the research team from Cranfield and the Director of Strategic Consultancy (this tension is considered in more depth under the 'people' dimension in section 7.2.4). The Senior Research Fellow (A7, 27/03/2006) argued that it was difficult to explain the HRO research to someone succinctly so that they understood the overall picture but at the same time provide them with enough

details to facilitate a deep understanding of the phenomenon. He felt that the Director of Strategic Consultancy did not fully understand the HRO concept. The meeting of the 21st October 2002 was followed by another on the 4th November where the Senior Research Fellow (A7) and researcher spent four hours discussing the findings of the HRO systematic review. Subsequently, on the 18th November, they worked for eight hours 'non stop' to structure the presentation and clarify the message H8 was to deliver two days later in front of selected invitees from MCompany's key clients.

The event on the 20th November was the first of a series of subsequent initiatives both with clients and MCompany staff. The director of Strategic Consultancy (H8) organised and presented the HRO project on a total of seven such occasions. Overall, these events were *very well received* by MCompany and interviewees defined them as follows:

> "I thought they were very, very good" (H14, Client Manager – Rail, 08/02/2006).

> "Extremely successful" (H12, Director of Business Transformation, 09/03/2006).

> "They were good events and they were good presentations" (H8B, Marketing Officer, 12/04/2006).

> "I found them very very valuable" (P21, Service Director – Highways, 02/02/2006).

> "I saw the client events as being one of the best elements in the process" (P23, Project Director – Roads & Rail, 01/02/2006).

> "I thought that discussion we had with the Highways Agency was extremely interesting" (H10, Managing Director – Rail-, 13/02/2006).

These comments refer to the events organised up to September 2003. Unfortunately, the last two events received a very different evaluation. The workshop organised on the 2nd December 2003 with senior representatives from the Gas Industry failed to engage the attendees in a fruitful discussion. On the contrary it stimulated a heated argument amongst some participants on whether the gas industry was or was not reliable. The research had never addressed industry-wide reliability but organisation-specific failure-free design. This and other *misinterpretations of the research findings* misled the audience, jeopardising the overall outcome of the event. The Senior Research Fellow argued that:

> "I thought a couple of significant events were the Highways one and the Gas one, those were significant… I thought it worked pretty well with Highways and pretty badly with Gas" (A7, Senior Research Fellow, 27/03/2006).

The last HRO event organised by the Director of Strategic Consultancy (H8) took place on the 27th January 2004 at the Institute of Civil Engineers in Whitehall, London. This event was attended by senior representatives from MCompany's key clients and the board of the newly merged company MCompany. Among others, the appointed Chief Executive (A1B) was among the audience. H8 did not circulate the content of the presentation to either the Research Consultant (A4) in MCompany or any of the Cranfield academics. The content of the presentation *was not agreed beforehand*. The Director of Strategic Consultancy used HRO ideas to deliver the presentation, but he

went well beyond what the research findings suggested about designing for failure-free operations, triggering reactions such as this (not attributed to ensure confidentiality):

> "I didn't have a fucking clue what H8 was going on about half the time, it certainly wasn't what we'd talked about, I think you must have been pretty annoyed on the day, some of the stuff he was talking about was crap".

The Director of Strategic Consultancy (H8) asked for feedback about how the event had gone and the academics responded with a detailed summary, highlighting six key inaccuracies. The first was a lack of clear definition of high reliability, leaving room for confusion with risk management. The second was that the presentation was framed in terms of the need for 'accountability' and 'responsibility' instead of the ability to manage complex, hazardous technologies in tightly coupled systems. Third, throughout the presentation comments were made about the 'rigorous' and 'thorough' research that had been conducted at Cranfield. However, significant portions of the presentation were not based on the research conducted. Fourth, the HRO principles were explained poorly. In addition, examples of non-HROs were used to explain HROs (such as a fire brigade). Fifth, too much emphasis was placed on implementation of HRO concepts/mindsets without an adequate justification for doing this. Sixth, none of the latest thinking on HRO was included.

As a Project Director (H11) suggested, some annoyance was evident among the Cranfield team. The presentation was perceived to have failed to tell a well-grounded story that could help the audience reflect about what it takes to become a high reliability organisation. The Director of Strategic Consultancy (H8) involuntarily put the academics in a compromising situation, claiming his argument was based on "rigorous research" (H8, Director of Strategic Consultancy, 27/01/2004) when it was not.

> "The presentation was a misrepresentation of the research and this led to considerable misunderstanding… It was a shame that none of our latest thinking could be included… I thought that the delivery was good, the venue was excellent and the participants appeared to have a good time. However, I was extremely disappointed with the content" (A7, Senior Research Fellow, 03/02/2004).

In hindsight, the misuse of the research findings may not have been critical from MCompany's point of view. However the new Chief Executive's opinion of the presentation was a matter of concern. That was the first event organised by the MC Centre he attended, and his view was that the event,

> "was pretty unsuccessful and I know that Cranfield were very upset, I'm happy anyway with the way that went because H8 put on a bit of a one man show around what he felt the findings were. I think my personal view coming fairly cold to it at the time but listening to what was presented was that really it was not particularly robust what he presented… And having such an invited audience, that was a one off chance really to make a real impact; we missed it I'd say" (A1B, Chief Executive MCompany, 08/08/2006).

There is no doubt that, overall, the client events and the workshops with industry leaders had a significant impact within MCompany. These events, using words from the interviewees, promoted an "ongoing debate" (H10, Managing Director Rail) and means "by which you can engage with your clients, get them away from their office and have an intelligent discussion about their issues and problems in a way that you cannot do in

almost any other way" (H14 Client Manager). The "key things were the presentations to clients" (A5, Project Manager) because they were seen as the opportunity "to sell us [MCompany] as a thought leader" (H11, Project Director). MCompany staff that attended the client events thought that they were "very constructive in terms of shaping the thought processes of what the client actually wanted" (P23, Project Director). These events embraced the very idea of 'thought leadership' that was at the heart of the MCompany–Cranfield collaboration.

> "I remember surprise at some of the events and people saying actually this is
> MCompany though this is an engineering company and now they're talking to me
> about quite interesting strategic management directions" (H8B, Marketing Officer,
> 12/04/2006).

The internal and external events enabled people to learn more about the characteristics of highly reliable organisations and to *incorporate some of the HRO concepts into bids, and proposals* for new contract work. HRO thinking was particularly used in those sectors such as highways and rail where the notion of failure-free performance resonated with clients' issues.

> "MCompany was definitely affected by our work on this [HRO], the bidding
> workshops that we did for the 'MCompany Wins' where we won all four complexes
> in one year, we were using these principles in the incident response units and
> MCompany was going to roll out on the network, so this did have an enormous
> amount of influence on the way we thought about our business opportunities, no
> doubt about that" (H9, Client Manager – Highways, 09/02/2003).

The Director of Strategic Consultancy left MCompany in March 2004 and the project lost momentum and was 'virtually abandoned' for few months. However, in August 2004, the project was resurrected and was placed back on the agenda. One of the Senior Consultants in Local Government services approached Cranfield School of Management with a *proposal to implement HRO principles* in a client organisation. It took a few months to find a suitable client which wanted to address organisational reliability in some depth. In 2005 the H County Council Highways department (hereafter HH) commissioned a joint MCompany-Cranfield implementation of a High Reliability Change Programme; at the time of writing this thesis, and after an initial implementation, a full roll out contract worth £100,000 has been approved (H15, Senior Consultant – LG Services – 26/01/2006).

High reliability organisations became the only project among the five MC Centre projects to go from dimensionalising an area or problem (research) to product development (consulting offering) using a methodology to identify concepts and propositions and validate them to build a conceptual model (MCompany process flow.ptt 14/10/2003). HRO was an exemplar of a project that bridged research and application (A6, Director of AMRC, 14/03/2006).

Despite the perceived success of the HRO project, the process of developing knowledge and learning about HRO was challenging. One of the key barriers was the perception that research was a complex and lengthy process. Interview data (H8 Director of Strategic Consultancy, 27/08/2003; A4, Research Consultant 02/03/2004) and documentary evidence (HROs - 8 dimensions 12/11/2002; High Reliability

Organisation Design , Dec 2004) showed the need to *continuously negotiate and refine the meaning* of concepts such as 'organisational reliability', and 'failure'.

> "We need to keep going back and visiting that research again and again and again. If we don't do that then we will never understand it, and I don't think that anybody understands it yet, I think they understand parts of it but we must keep building on it and adding to it" (H8, Director of Strategic Consultancy 27/08/2003).

Part of this refinement process was the *contextualisation* of findings in order to make them meaningful to MCompany's business. As stated earlier, HRO research was in its origins conducted in highly hazardous contexts (e.g. nuclear power plants). The challenges of reliability in these environments are different than those faced by other commercial and public organisations (H18, Director of Government Services, 12/07/2006). The need to contextualise HRO research findings, to fit MCompany selected markets, was argued to have lengthen the learning process (H15, Senior Consultant – LG Services, 26/01/2006). The joint academic-consulting endeavour needed *to turn research findings into propositions* suitable to be presented to clients was *under-estimated*. Efforts from MCompany's consultants were focused on "getting the message out" (H8, Director of Management Consulting, 14/04) often at the expense of dedicating time to understanding HRO and creating the message.

> "Certainly a perception, internally, was that client events were kind of a KPI for the Centre, probably to the detriment of the stuff that's going on in the background. I think there's a huge underestimation and an attitude of 'we don't really need to know about that'. We want to see end benefits, it's about destination, not journey" (A4, Research Consultant 02/03/2004).

The project was also jeopardised by the *lack of time* devoted to it. As the project sponsor (H10) recognised, "the HRO project was interesting and I think it was always a struggle to get enough time off the right people on to it". When the Director of Strategic Consultancy left MCompany, the result was a lengthy period of inactivity.

> "We probably, principally because of me, did not do anything for the last 6 months. It was a big mistake, should have done something, should have pushed it harder, we should have carried on with HRO, we've lost our momentum" (H8, Director of Strategic Consultant, 27/08/2003).

The above aspects related to the 'practices' of the project precluded the achievement of more outputs. The Managing Director of Management Consultancy said that, "after the event last November we could have published a lot more" (A2 04/08/2003). However, the HRO project was, overall, considered a project that accomplished its aims. The following sections on the 'content' and 'people' will offer some explanations as to why this was the case. Before moving to the 'content' a summary of enablers and barriers is provided in Table 7.2

Enabling practices in HRO		Practice barriers in HRO	
Fixing a date for a dissemination event.	Focuses effort to synthesise from the research, propositions to present to clients.	*The need to negotiate and refine meaning.*	HRO findings were not immediately obvious and needed time to be fully comprehended.
Number of dissemination events.	The more dissemination, the more debate and client engagement is achieved.	*The need to contextualise the findings.*	The contexts from which HRO is originally derived, are not suitable to MCompany's market.
Utilisation of the research findings in bids and proposals.	This is an example of 'conceptual' and 'strategic' use of research.	*Under estimation of the research effort.*	The visibility of the events eclipsed the previous efforts.
Implementing the findings in a real intervention.	This is an example of 'instrumental' use that reinforces the 'conceptual' and 'strategic' use of research.	*Lack of time.*	Not sufficient time to devote to the project puts outputs in jeopardy.
		'Opportunistic' approach to run the project.	This approach caused tensions.
		Misinterpretations of the research	May create an embarrassing situation.

Table 7.2 Enablers and barriers in the practices of the HRO project. Compiled by author.

7.2.4. The people in the HRO project

This sub-section below describes the HRO project and how it was characterised by a full engagement of the Director of Strategic Consultancy in leading the project. Heavily supported by the Cranfield team and the research conducted on HRO, he managed to turn HRO into the most successful project of the MC Centre.

According to most of the interviewees, the *engaged ownership* of the project leader, fuelled with his passion to make the project succeed made a clear difference. The strong leadership for the project was recognised by a number of colleagues, for instance the Director of Business Transformation claimed that,

> "HRO was much higher profile because H8 pushed it much harder …. It was about firstly it was lead energetically by H8, working in conjunction with Cranfield, so it had strong internal leadership within MCompany" (H12, Director of Business Transformation, 09/03/2006).

Director of Strategic Consultancy was determined to make the project work because this project "fitted within his objectives, at least he did push things through" commented H8's boss, the Managing Director for Strategic Consultancy (A2, 02/02/2006). The project leader was seen as someone who "was always coming up with ideas and I think from that point of view it was good, he thought hard and tried to think and come up with ideas, to try and get somewhere" (AM26, Project Director, 21/03/2006). *Supported* by the effort the Cranfield team and other colleagues put into the HRO research (AM24, Director of Decision Analytics, 10/03/2006), the project sponsor stated that "H8 was absolutely key in terms of the strategic thinking that went on" (H10, 13/02/2006) and in the dissemination of that thinking internally and externally.

The project leader (H8) was *strongly motivated* to promote the HRO project. He was passionate about this initiative and took a very personal stance on it. In one of the interviews with him he acknowledged,

> "OK, I'm being very honest, my motivation was: I like working with clever people, that's one. The second thing is I love presenting in front of an audience, I love that. And third I thought it was good for my career, perhaps it wasn't but I thought it was" (H8, Director of Strategic Consultancy, 13/04/2006).

In the previous sub-section that addressed the 'practices' of the project (7.2.2), it was described how the first events with clients were organised. In that account, some of the *tensions experienced* were illustrated.

> "I think there were some special conflicts in that one month period to get there. But I think it was a reasonable outcome, but it was also a lesson how not to ... how we shouldn't do these things" (A2, Managing Director Management Consultancy, 04/08/2003).

The following quote from one of the participants summarises how he was perceived,

> "The Director of Strategic Consultancy came across as someone who was quite arrogant and quite opinionated". (Source: given the sensitivity of the comment, the source details are omitted in order to ensure total anonymity).

As the project moved on, the initial disputes faded, and the relations improved to some extent. In hindsight it seems that the Director of Strategic Consulting believed the initial difficulties were the price one has to pay to get things done.

> "Yes and I think some of that tension is fine because there's no point in doing research for the sake of research … The idea was to get people engaged and to get them engaged they must also have had something which was valuable to the company" (H8, Director of Strategic Consultancy 13/04/2006).

People enablers in HRO		People barriers in HRO	
Engaged ownership of the project	Facilitated leadership and the necessary activities to drive the project forward.	*Personal tensions.*	Creates bad climate and could potentially jeopardise the quality of the collaboration.
Support from peers, partners and senior managers.	Helped in doing the tasks needed for the project to be successful (peers) and gained legitimacy.		
Strong intrinsic motivation.	Underpinned the drive and energy to lead the project.		

Table 7.3 Enablers and barriers of the 'people' dimension in the HRO project. Source: Compiled by author.

7.3. Project 2. Public Private Partnerships

7.3.1. Overview

Public-private partnership (PPP) was the second project conducted within the MC Centre. The aim of the PPP project was to investigate the probable causes underlying successful (and unsuccessful) partnerships. Specifically, the focus of the research was on gaining a deeper understanding of how PPPs can be managed to ensure the successful delivery of their objectives. Unlike the HRO project the PPP project was characterised by a pre-planned approach with regular monthly project meetings, with documented agendas and actions for each meeting. PPP is one of the mechanisms by which MCompany delivers managed services to important clients in local and central government. Thus, the theme was tightly linked to the company's core business. The focus of the research was jointly set by the project team and defined in very broad terms. The project addressed the question 'what makes PPP succeed or fail?'

The project sponsor was the Managing Director of the Managed Services Group in MCompany (P19). The project leader of the PPP project was the Director of Business Development. Other people were invited to participate like a Service Director – Highways (P21), a Project Director of the Roads and Rail Group of MCompany (P23) and a former Associate Director of Public Services Research at the Government Agency (P22). The team was completed with the Research Consultant (A4), and the academics from Cranfield School of Management AMRC: the Director (A6), a Senior Research Fellow (A7) and a Research Officer (author of this thesis). The relationships among the project were friendly and cordial. (A2) and an MCompany Non-Executive Director (A3) were also involved.

7.3.2. The content of the PPP project

What follows is an analysis of the subject theme of the PPP project. The appropriateness of the research question and the novelty of the research findings were severely questioned by various individuals both at MCompany and at Cranfield. This sub-section explains how the content of this project jeopardised its overall perceived accomplishment.

PPP is a key area of business for MCompany and a key way in which it delivers services to key clients in local government. Thus, it was regarded as "highly relevant" (Managing Director of Government Services, P19, 20/12/2004) by most of the interviewees. Research on PPP was regarded as relevant since it addressed a key issue for the company, which was how to improve the management of contracts and services delivered through partnerships. It was also relevant for the day-to-day job of the project sponsor (P19, responsible for Government Services) and the project leader (P20) whose remit was to develop this area of the business. It was also relevant in terms of P19 and P20's background since both of them had worked in public administration earlier in their careers.

The project was perceived to be *rigorous and well-researched.* It followed an evidence-informed approach to management knowledge and employed the principles of systematic review to locate, appraise and synthesise the existing available evidence (see chapter 2 for more details).

> "We finished up with something that was worthwhile and valuable, and I think the two main planks of that value come out of, or maybe three, well one comes out of all the work that you did with desk research, the academic research" (P19, Managing Director Government Services, 20/12/2004).

Despite the rigour of the process there was a distinct lack of high-quality existing empirical work in this field. The Senior Research Fellow (A7) commented at one of the meetings that "practice is ahead of theory in this field". This meant that many of the findings were not perceived as *new* by respondents and at many of the meetings participants asked the question 'so what?'. (A4, Research Consultant, 20/03/2006; A7 Senior Research Fellow, 27/03/2006). The result of the project was characterised as "an awful lot of fairly obvious sort of stuff" (P22, Associate Director – Public Services Research –Government Agency, 10/01/2005). Not just members of the project team but also members of the board who attended the client event when research findings were presented claimed,

> "I was quite sceptical about it because I didn't think it was that novel, I think a lot of people were doing similar research at about the same time" (A1B, CEO MCompany, 08/08/2006).

The PPP project team started with *a vague research question* which was: 'Is PPP a good or bad thing?' (Actions PPP Research forum 26/11/2002). The academic team expressed their concerns about the lack of precision and specificity of that question. Despite these concerns, the research project progressed based on a question of dubious value. At that meeting (28/01/2003) some keywords and selection criteria were agreed. Using these, initial searches and a descriptive analysis of the evidence were conducted (2003 06 10 Descriptive Analysis 29/07/2006). It was found that PPP literature was divided into two key areas. The first area of literature addressed the 'political' case for or against PPP and addressed whether or not PPPs were appropriate mechanisms to deliver public services. The second key question was the 'managerial' case for PPP, focusing on the approaches and methods to effectively manage PPP. The research question adopted by the project team 'is PPP a good or bad thing?' addressed the 'political' case, and MCompany wanted to pursue the managerial case (Field notes PPP meet 5. doc 29/04/2003).

The question was therefore changed to 'what makes PPP succeed or fail?'. It was still a very general line of enquiry, but the research team did their best to locate and synthesise relevant and quality evidence. However, the result was an insufficient accumulation of reliable evidence (Descriptive Analysis Complete 10/06/2003). Acknowledging this situation, and thinking of ways in which to strengthen the research project, it was decided to conduct a series of applied case studies in a range of MCompany's client organisations (Actions - PPP Research Forum 29/04/2003). Initially, a survey was considered but given the lack of resources available for such a specialised research project, a case study approach to gather field data was finally adopted (Actions - PPP Research Forum 10/06/2003). The project team agreed that the Research Consultant

(A4) would conduct the case studies in nine PPPs, three of which would be on PPPs that were perceived to be successful by all parties, three that were regarded as 'normal' or 'neutral' and three that were perceived to be failures (Actions - PPP Research Forum 29/04/2003). This, it was hoped, would allow interesting conclusions to be drawn about what makes PPP succeed or fail.

Despite being identified as a key action, *the case studies were never conducted*. The only 'empirical' data collected for the project comprised of five interviews with representatives from five organisations who had recently been involved in PPPs (PPP Description of empirical work - Case Study 15/04/2004). One interviewee even complained about the case write up saying "the 'report' contains a number of inaccuracies, please call me to discuss" (A4 complaints about Case Study transcription 19/04/2004). The lack of empirical data was seen as a major flaw, as it failed to bring *new insights* to the research.

> "There are areas of the project that we set out in the beginning to deliver on which we really didn't deliver on, particularly around the case studies where we said we would get that information and focus on doing that and what we did do was fairly poor in terms of the quality" (P19, Managing Director Government Services, 20/12/2004).

The report that was published from the research (MCompany Cranfield Centre, 2004) was not strong enough. It was not academically rigorous since existing quality evidence about PPPs was limited and *it was not supplemented by empirical work*. Furthermore, it was not regarded as interesting because it contained "basic stuff that you could read day in, day out" (H8, Director of Strategic Consulting, 13/04/2006). Despite all efforts to work together towards a better understanding of the management of PPPs,

> "all that they did was to confirm what I already believed I suppose, but it's just given me more confidence around it I suppose" (P20, Managing Director Government Services, 20/12/2004).

Overall as the CEO recognised,

> "I think the problem was about the content" (A1B, CEO MCompany, 08/08/2006).

Table 7.4 summarises the enablers and barriers of the 'content dimension in the PPP project.

Enabling content in PPP		Content barriers in PPP	
Relevant	PPP was relevant to MCompany, relevant to the role of the project leader and project sponsor and related to their background.	*It was not new.*	Research perceived as not novel, may fail to address the question 'so what'.
Rigorous	The research was conducted using a rigorous methodology.	*A vague research question.*	Does not guide and focus the research to look for findings that are specific.
		Lack of empirical work.	Reduces the quality of the research and precludes the identification of insightful cases of the phenomenon.

Table 7.4 Enablers and barriers of the 'content dimension' in the PPP project. Source: Compiled by author.

7.3.3. The practices in the PPP project

The PPP project benefited from *a planned approach* that emphasised regular project meetings and frequent communications (Field notes PPP Meet 1 28/01/2003). The tensions created in the HRO by the lack of previous planning, were avoided in this project, and recognised by some of the participants.

> "I think that the process we've now got on the other forums [projects including the PPP] is much better because it's got a planned approach, a sequence of events and resources committed to it" (A2, Managing Director of Management Consultancy, 04/08/ 2003).

The process was also different in that the team started from the beginning of the project by defining the focus and eventually the intended outcomes. This was a very different approach to the HRO research, which was primarily initiated by the Cranfield research team. The project sponsor recognised that "the process was fairly crucial and was largely helpful" (P19, 20/12/2004). This was also the perception of the project leader:

> "Clearly we had a process to go through in terms of getting sign-up to the relationship and also to the piece of work and so on, so all that sort of buy-in." (P20, Director of Business Development, 20/12/2004).

The process with scheduled meetings and regular updates facilitated a continuous discussion within the team. The overall strategy of the project was co-production of management knowledge following an evidence-informed approach (Tranfield, Denyer et al., 2004b). In this process, the Cranfield team would be in charge of locating and subsequently appraising academic evidence on the topic. The process was described by the project leader as,

> "drawing an analysis together into some kind of coherent argument and that was really very helpful, and you did that a lot, and it all made so much sense" (P20, Director of Business Development, 20/12/2004).

Originally, the project set out to complement the evidence-based research with empirical work. At all times participation and contributions from all members were encouraged, and decisions were made collectively. For instance, although initially the intention was to conduct a survey, later it was decided to conduct case studies. People generally felt that the discussions were interesting and enjoyable.

> "Why it was interesting being involved was you could have a 'lets sit round the table, let's debate this, let's kick ideas around' and so on. It's a very good thing to do and I felt happy to share my views as everybody else did" (P22, Associate Director – Public Services Research – Government Agency, 10/01/2005).

There were a total of 15 meetings from January 2003 to June 2004. Of all those meetings "the only meetings that really stand out as significant were the ones where we did the post it note thing" said the Senior Research Fellow (A7, 27/03/2006). The "post it note thing" refers to a visual display of the emerging findings. In order to facilitate interaction, the key dimensions and sub-dimensions were written in different shaped papers and stuck on a glued paper panel. Project members were asked to 'walk around' and contribute fixing 'post it'® notes written with comments or apparently missing elements (see Figure 7.1).

Figure 7.1 Example of an interactive visual display of the emerging findings

In the PPP project, before organising the public event with key clients, two representatives from key clients from the local government and rail sectors were invited to a meeting to discuss the emerging findings of the research. The purpose of this invitation was to 'challenge' the research findings and get external feedback from individuals with extensive practical experience in PPP (Field notes PPP meet 9-Challg Meet 07/10/2003). Inviting *clients to participate in project meetings* was perceived useful to focus efforts, to clarify the propositions drawn from research and to craft the overall argument. In the PPP project, the specific focus of the research was ill-defined. A project director and member of the project team recognised that,

> "it wasn't until we needed to get to a challenge meeting that we actually defined
> things" (P23, Project Director – Roads and Rail, 01/02/2006).

Similar to the HRO project, a key deliverable from the project was perceived to be the organisation of *presentations to clients* normally followed by a dinner or a social event (Approach conduct Forums and SRs 27/08/2002). In the case of the PPP project one major event with key clients was organised on the 24th June 2004 at the Grosvenor Hotel in London. The event was regarded by MCompany as extremely important because it gave them the opportunity to enhance their external visibility (P20, Director of Business Development, 23/01/2006). The events were also considered a key performance indicator of the projects and the MC Centre overall (A4, Research Consultant, 02/03/2004). The PPP project leader argued,

> "I think doing the event was probably the key thing and also doing the research for it
> beforehand although it was on a smaller scale" (P20, Director of Business
> Development, 20/12/2004).

The PPP event in London was organised in a participative fashion. The basic findings of the research were briefly presented to attendees who were then invited to break into small discussion groups. Each group addressed questions that had emerged from the research as deserving special attention (Key questions raised in the exploratory work 04/07/2004). The answers from the discussion groups were collected and incorporated into a final report that was issued in October (MCompany Cranfield Centre, 2004).

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Evidence of how MCompany benefited from this project is limited. When interviewed, both the project leader and the project sponsor declared they thought the client event was very satisfactory. However the project leader referred to an episode that may have been significant:

> "People from R County Council [name concealed] weren't at the dinner, *we sent them a copy of the report and we used it in our presentation* but the chief exec there was quite interested in it and another client that had been at the event since then had just in terms of having being in touch with me said I do think there was some substance in that and I do think when I do my next procurement process" (P20, Director of Business Development, 23/01/2006). (Emphasis added).

On the 11th July 2005 MCompany was appointed preferred bidder for a £187.5 M service contract for R County Council. The contract started on the 1st April 2006, becoming the largest single contract that MP had won to date. The CEO declared that,

> "this is a tremendously positive development for the Group. We are absolutely delighted to have secured this contract against stiff competition and it confirms our position as the leading provider of professional managed services to local government" (A1B, CEO, 11/0/2005).

The PPP project, however well-organised, was perceived to have had some project flaws that interviewees highlighted and the document analysis revealed. The most salient pitfall was the *lack of clarity of what the project was about.* The project was defined in very broad terms and the scope was PPP in general rather than the investigation of a specific aspect of the management of PPPs. The Associate Director – Public Services Research – of the Government Agency, who was an external but actually heavily involved along the whole project, claimed that the project,

> "could have achieved more if there'd been some clarity at the beginning of what the purpose was, what the product was, who the target audience was, how to marry up the academic and the commercial world" (P22, Associate Director (Public Services Research) Government Agency, 10/01/2005).

Despite the advice from Cranfield researchers (A7, Senior Research Fellow, 27/03/2006), the project progressed without a clearly understood and shared purpose.

> "If you go back to the beginning I think we've had trouble defining what we were trying to do, had trouble defining PPP's, we had trouble defining what aspect of PPP's we were having a look at, I think just defining the objective in the first instance" (P23, Project Director – Rail & Roads, 01/02/2006).

Another barrier to the overall outcome of the project was an *insufficient level of client involvement.* Over the 15 months that the project lasted, only two events involved MCompany's clients: the Challenge Meeting (07/10/2003) and the Industry Leaders Event (24/06/2004). The project leader recognised that,

> "One of the learning points for me would be, we have massive amounts of project meetings but we only really have the couple that were client contact whereas HRO clearly had much more client contact which I would say that's very good" (P20, Director of Business Development, 20/12/2004).

The project was considered *too long* by many interviewees. There was a period of at least four months after MCompany announced its merger with PCompany that the project was put on hold. The project leader was appointed Human Resources Director for the newly-formed MCompany and given the responsibility to manage the integration of the two companies (P20, 20/12/2004). The result was that "the whole project lost momentum, things weren't getting done ... and it just dragged on and on and on" (P22, Associate Director – Public Services Research, 10/01/2005). In hindsight, the project leader recognised some the actions that would have made the project more successful.

> "I suppose stick to a shorter timescale, so create a project timeline and stick to it; resource it appropriately, not get the person who's leading it changed over midstream in terms of the priorities and that sort of thing" (P20, Director of Business Transformation, 20/12/2004).

The last key barrier that emerged from the data was the lack of *follow up* of the project. PPP is a critical area of business for MCompany, and one example of it has been described in the previous section. Given the importance of PPP and recognising that the research conducted was broad, it is surprising that no follow up was planned.

> "What is of more concern to me is that I don't see any further use of it, going forward having one client event and issuing a report should be the start of the next stage rather than the end of things" (P23, Project Director – Rail & Roads, 01/02/2006).

The MCompany research consultant was particularly critical with the lack of follow up, after the long process it had taken to issue the report and the high number of meetings the project team attended.

> "To be absolutely honest with you … that is criminal that PPP, that P20 didn't drive that forward, …, how can you work something up for a year and whatever and then bottle out at the last minute" (A4, Research Consultant, 20/03/2006).

Table 7.5 summarises the findings of the 'practices' element of the PPP project.

Enabling practices in PPP		Practice barriers in PPP	
A planned approach.	Provided a process that was helpful to progress with the project.	*Lack of clarity of what the project was about.*	Jeopardises efforts, and hinders co-ordination and effective contributions of the project team members.
Interactive aids to present research findings.	Helps understand the findings and contributes with experiences, cases and anecdotes.	*Insufficient level of client involvement.*	Limit opportunities to discuss the findings, refine thought processes and ultimately to link it to business opportunities.
Client events.	Helps raise the profile of the organisation and with being seen as 'thought leaders'.	*Perceived duration as too long.*	The length of the project precluded a more focused and effective way of achieving the outcomes.
Use of the research findings.	Findings were used in bids, and proposals for new work.	*Lack of follow up.*	The lack of follow up was counterproductive to the perceived importance of the project for the organisation.

Table 7.5 Enablers and barriers of the 'practices' dimension in the PPP project. Source: Compiled by author.

7.3.4. The people in the PPP project

Overall *the relationships within the project team were largely positive* and affable. ºThe project leader, for example, thought that "personalities helped, and not having politics in the team helped" (P20, 20/12/2004). This perception was shared by the project sponsor, who claimed,

> "the blend of individuals as well as the relationship and the blend of individuals both
> in terms of personality and where they were coming from I think worked pretty
> well" (P19, Managing Director Government Services, 20/12/2004).

Personal ownership of the project was regarded as particularly important, especially at the project-leadership level. The project leader "worked enormously hard and if it hadn't been for her it probably would have folded up" (P22, Associate Director – Public Services Research – Government Agency, 10/01/2005). Despite the huge pressure placed on the project leader by her appointment as HR Director in charge of the merger,

> "she was the one to make sure that we met, she was the one that took it on herself to
> make the meetings and discussions successful. So she was key not only in
> influencing but also in delivering" (P19, Managing Director - Government Services,
> 16/01/2006).

The Associate Director of Public Services Research at the Government Agency, who was involved in almost the entire project, someone with much experience in managing research projects of this nature, claimed,

> "That word, ownership, is absolutely vital in any project, which I used to stress at
> the Government Agency. Someone's got to own it and make it happen and there
> wasn't anyone doing that here (P22, Associate Director –Public Services Research –
> Government Agency, 10/01/2005).

The *contribution of the 'external'* team member, the representative from the Government Agency was highly regarded. He was thought to "bring some really good thinking from his rigour as being in the Government Agency" (P19, Managing Director – Government Services, 20/12/2004). The project leader thought it was "fundamental" (P20, 20/12/2004) to the overall project.

The mixed results of the PPP in terms of delivering its intended outcomes can be also attributed to some dysfunctions that occurred within the team. Overall, the personal relationships were perceived as positive but, according to the Associate Director of Public Services of the Government Agency, this led to a *lack of mutual questioning* about how the content had been defined and how the process was evolving,

> "That's my observation, seeing you in meetings, friendly meetings, friendly
> discussions, but it didn't really work very well" (P22, Associate Director –Public
> Services Research – Government Agency, 10/01/2005).

For each project meeting all members had an agenda and actions that the project leader issued. However, some of the actions remained unaccomplished from project to project.

> "You'd come to another meeting in two months time and let's sit round a table and
> let's have a chat about this and new ideas and so on. And P20 [project leader] tried

very hard to pin people down and say look, who's actually going to do something"
(P22, Associate Director – Public Services Research – Government Agency,
10/01/2005).

According to the Senior Research Fellow (A7), the Non Executive Director (A3) and
other members of the project team (P19 and P20), the *individual who failed most to
deliver* his assignments was the Research Consultant (A4). Although his
underperformance was noticed it was not properly addressed,

> "We know that we had one member of our team, I'm not sure if he ever was a
> member of our team, A4, who was a complete bloody waste of space and I think we
> should have been much tougher on that and that's down to us really." (P19,
> Managing Director Government Services, 16/01/2006).

The Researcher Consultant himself recognised his lack of effort.

> "PPP was just a dead duck, maybe my responsibility in PPP was to highlight the
> way in which we were performing badly, did I ever do that? No. Did I ever have any
> appetite to do that? No" (A4, Research Consultant, 20/03/2006).

Other appointed team members showed a *low commitment to the project*. They failed to
attend many meetings. Thus, their contribution was modest, limiting the chances of
achieving better project outcomes.

> "To be honest I probably wasn't motivated enough" (P21, Service Director –
> Highways, 02/02/2006).

> "I don't believe I had [participating in the project] high up in my agenda" (P23,
> Project Director – Roads and Rail, 01/02/2006).

Table 7.6 captures a summary of the enablers and barriers of the 'people' dimension in
the PPP project.

People enablers in PPP		People barriers in PPP	
Affable relationships	Affable relations favour a climate of confidence and make the project more enjoyable and rewarding.	*Lack of mutual questioning*	Prevents addressing key questions allowing complacency with underperformance
Personal ownership	Is vital in the project to make it happen.	*Individuals not delivering*	Compromise the quality of the outcomes or the outcomes themselves.
Contribution of external members	May bring different ideas and alternative ways of thinking.	*Lack of engagement*	Limits potentially valuable contributions.

**Table 7.6 Enablers and barriers of the 'people' dimension in the PPP project. Source: Compiled by
author.**

7.4. Project 3. Asset Management

7.4.1. Overview

Asset Management (AssM) was the third project defined in the MC Centre research programme. One of the key aims of the project was to build upon previous research conducted before the inauguration of the MC Centre which looked at the Strategic Management of Long Term Assets (SMoLTA) (The MCompany-Cranfield Centre, 2001). A further reason was that the Managing Director of Management Consultancy was extremely keen to be involved in the research programme the department of Decision Analytics which was part of Management Consultancy Group (MCC Towards a 5-year strategy 23/08/2001).

Decision Analytics was the unit responsible for providing specialised Asset Management, using advanced modelling techniques to help clients understand, plan and improve the efficiency of their assets and to outline long-term management options. Its clients are able to plan for the future with greater certainty, and confidence in the knowledge of reduced risks. The Asset Management team identifies the best solutions available by developing innovative models and cases, examining scenarios and forecasting outcomes of each decision and their impact on the client's business. Asset management services included project reviews, business cases, financial models, operational research models, statistical models, whole-life costing models, asset management planning, options appraisals, and gateway reviews (MCompany website).

7.4.2. The content of the AssM project

The aim of the project was inextricably linked to the question to be addressed by the research. The team found extremely *difficult to define the question*. On the 27th February 2003, a project launch meeting was organised. The purpose of the meeting was to identify the question to be addressed by the research. Prior to that, the project leader discussed a document titled "A working definition of asset management". The discussion that followed evidenced that everybody involved in the project,

> "had a different view about what asset management was" (AM24, Director Decision Analytics, 10/03/2006).

In addition, the project was framed around a 'theme' not a practical problem that many interviewees regarded as too vague and extensive,

> "I actually felt that one [AssM] was incredibly difficult to focus, it's a really broad topic" (AM26, Project Director, 21/03/2006).

The differences in what asset management meant were put aside for a while in the hope that some common theme of interest to all the project members could be found. During the project meeting discussions four different questions were put forward. Firstly, 'What is the role of Asset management in helping businesses restore confidence from shareholders?'. Secondly, 'At what point did business performance get disconnected to shareholder price?'. Thirdly, 'What is the link between asset management and

shareholder value?'. Fourthly, 'How can you measure whether an asset is delivering the strategy it is meant to deliver?'

After two and a half hours of discussions and 15 minutes before the end of the meeting the project leader proposed an all-encompassing fifth question: 'Are organisations maximising the link between asset management and service delivery?' (AssM Field notes Meeting 0 27/02/2003 #1). The heterogeneous nature of these questions highlights the disparate interests within the research team, which proved difficult to reconcile.

> "I was in the meeting when probably an hour, an hour and a half talking about that
> phrase and I just think that says everything, that nobody could agree the question for
> the project" (AM27, Senior Consultant, 13/02/2006).

Although a clear question could not be achieved, the project team agreed that *the question should have the following features*. It should be current, as opposed to classic. The question should address issues with direct and great financial implications as opposed to pure managerial issues. It should be of interest for MCompany's clients rather that to MCompany itself. And finally the question should be strategic not operational (AssM Field notes Meeting 0 27/02/2003). Subsequent meetings that aimed to specify the question experienced some difficulties (these are briefly described in chapter 2, section 2.4.4.1). Eventually, the team agreed a focus for the project which was to use the concept of 'organisational resilience' to inform the management of assets (Field Notes Conference call AssM 10/11/2003). The project leader (AM24) left MCompany in January 2004. A new person (AM28) was appointed to take over; he noted that,

> "one of the first things that I actually looked at is, let's redefine the question and
> start again because I didn't really think it was appropriate" (AM28, Sector Leader –
> Water, 20/02/2006).

Despite the new project leader, the team continued to find it difficult to specify a researchable question despite all efforts.

> "He [the project leader AM24] did try hard, my personal view is that it was he
> couldn't find a question which one he could research and two would give us
> potential outputs which would interest clients" (H11, Project Director – Highways,
> 08/02/2006).

The next section analyses how a subtle divide between engineers and management consultants made it difficult to fully agree the purpose of the project.

Table 7.7 summarises the enablers and barriers of the 'content' dimension in the AssM project.

Content enablers in AssM		Content barriers in PPP	
Defining the features of what is sought.	The discussion to try to identify the question was aided by defining the attributes of the question (given that the question itself did not emerge).	*Research question difficult to define.*	The team could not identify a commonly interesting question. Different conceptions of what asset management was did not help.

Table 7.7 Enablers and barriers of the 'content' dimension in the AssM project. Source: Compiled by author

7.4.3. The practices in the AssM project

The AssM project was run following a similar approach to that of the PPP project. A project team was appointed and encouraged to define the focus of the research and to work towards the creation of outputs of the benefit for MCompany. The process was perceived to be effective but insufficient to overcome the barriers encountered.

Overall, *the way the project was managed* was perceived *appropriate* to conduct research to inform the practice of asset management within MCompany. As a Project Director – Decision Analytics, commented,

> "the overall approach I have no quibbles with, it seemed sensible to at least try and find out, you know to take a topic, try to formulate it and then see what the information was around and then try to draw conclusions and try to develop a way forward" (AM26, 21/03/2006).

The project leader recognised that with the *co-production approach*, and working together to combine academic evidence with practitioner experience, "we probably had the starting point of a good approach there of something which could have mirrored the success of HRO" (AM24, Director of Decision Analytics, 10/03/2006).

At the meetings "there was a lot of good thinking that went on about crafting the question" (AM25, Project Director, 13/02/2006). The discussions provided the opportunity to *analyse collectively* some of the challenges faced by the owners of large infrastructure assets. These analyses or speculations were perceived very valuable.

> "the meetings of asset management. ... even if I'd sat down and tried to work it out on my own, I wouldn't have come up with what we came up with. And so it's one of those cases when you get five or six people with slightly different perspectives in a room and you [Cranfield researchers] leading us with these sort of slightly provocative questions of where do we go next as it were, you end up with something that is more than the sum of it's parts" (A3, Non-Executive Director, 04/08/2003).

Despite having a prototype process to conduct the research projects, and the experience of the previous two projects (PPP and HRO), the aim of the AssM project remained largely unclear. A Senior Consultant and member of the team thought that "the asset management was ill defined and had no perceivable purpose, it just didn't know what it was doing" (AM27, Senior Consultant, 13/02/2006).

In an interview, one member of the team stated,

> "That's it, I think we should have been more focused on getting to a particular deliverable and I think we should have been more driven towards achieving that *goal*" (AM25, Project Director, 13/02/2006). (Emphasis added).

The problem was precisely that defining the *goal* proved very difficult. The findings from the 'content' and 'people' dimensions offer some indications as to why this was the case. Table 7.8 summarises the enablers and barriers of the 'practices' dimension in the AssM project.

Practice enablers in AssM		Practice barriers in PPP	
A co-production approach to research	Facilitated discussions that triggered collectively-construed analyses of challenges clients face.	*Lack of clarity about the purpose*	The aim of the project was unclear, and people found it difficult to channel their efforts towards a productive end.

Table 7.8 Enablers and barriers of the 'practices' dimension in the AssM project. Source: Compiled by author.

7.4.4. The people in the AssM project

Chapter 2 provided an overview of the history of MCompany and showed how it is making every effort to develop its Management Consultancy offerings. However, MCompany was still regarded by many employees as,

> "an engineering firm basically and although there is a managerial capability there, that's not really what we study, most people come from an engineering type background" (AM26, Project Director, 21/03/2006).

The struggle to reconcile MCompany's engineering heritage with the desire to provide strategic consultancy was evident in the AM research team.

> "I think AM24 [the project leader] suffered from the fact that he didn't have a lot of overall perspective, he was just a management consultant, I think it was a cultural thing" (AM27, Senior Consultant, 13/02/2003).

Management Consultancy was a division within MCompany that brought together diverse units such as Strategic Consultancy, Business Transformation and Decision Analytics (MCompany organisation chart. 21/07/2003). A large proportion of the Decision Analytics work was "modelling, in the context of assets" (AM26, Project Director, 21/03/2006) using specialised quantitative techniques. This capability was seen as conflicting with the overall 'thought leadership' approach of the MC Centre.

> "they're looking for innovative people who can come up with some good ideas and the people that we are around really we just weren't in that league, so that was that, that's my reasons really for the way it went" (AM26, Project Director, 21/03/2006).

Given this lack of focus and a mismatch between the project purpose and the members' background people found difficult to *commit time* to the project, limiting its development.

> "With all the other things that were going on at the same time, I guess a slightly lower priority level and I think a lot of people including myself were all very busy" (AM25, Project director, 13/02/2006).

The lack of continuity of people was an important obstacle for the project that,

> "possibly would have worked had he [the project leader] not left" (A2, Managing Director Management Consultancy, 02/02/2006).

Table 7.9 summarises the findings of the barriers of the 'people' dimension in the AssM project.

People barriers in AssM			
Lack of commitment	People assigned low priority to the project.	*Reconcile managerial and technical backgrounds*	Created different perspectives and eventually a cultural divide.
Lack of continuity	It was difficult to carry on with the project once its original leader had left.	*Lack of time*	People not attending the meetings. Failed to create a critical mass.

Table 7.9 Barriers of the 'people' dimension in the AssM project. Source: Compiled by author

7.5. Project 4. Private Finance Initiative

The fourth of the MC Centre projects was also linked to the results of the Strategic Management of Long Term Assets (SMoLTA) research (The MCompany-Cranfield Centre, 2001). This research revealed the increasing importance of PFI as a mechanism to design and build large infrastructure assets.

This project was conducted in the context of the procurement services that MCompany offered. The procurement department provides financial, commercial and technical advice on procurement of contracts. In particular, it helps clients assess the viability of delivering services in partnership with public or private sector organisations, carries out risk assessments and acts as the client's adviser for the procurement of PFI and PPP projects. Working closely with a wide range of procuring organisations and stakeholders including local authorities, contractors and funding agencies within the public sector and regulated industry, the aim of MCompany's procurement services is to radically improve the approach to procurement by: developing procurement strategies, partnership procurement, public private partnerships (PPPs), private finance initiatives (PFIs), gateway reviews, financial analysis, project management and procurement delivery, due diligence and compliance monitoring (MCompany website).

7.5.1. The content in the PFI project

PFI comprises a mixture of complex financial models, large infrastructure design and wide temporal horizons. As the Director of H Highways commented,

> "PFI is just too big a pill, so there's plenty of people involved in PFI, so I can understand [why it failed]" (H17, Director H Highways, 12/07/2006).

PFI was "definitely high up on the government's agenda but very sector specific, it was construction only" (A6, Director of AMRC, 14/03/2006) which limited the application of potential research findings. In addition to the lack of viability of the concept, a failure in the leadership of the project rendered it a mere desire. Only two meetings were organised on the 4th December 2002 and 28th January 2003. After the second meeting the project disappeared from the MC Centre's agenda.

7.5.2. The people in the PFI project

When asked about the reasons why this project was not taken forward, the MC Centre Coordinator and Marketing Manager recognised that,

> "They were going to happen (projects PFI and BussT), but what I discovered was
> that we were trying to do all of them at the same time and 'spreading the jam too
> thin'. We ended up prioritizing and attacking one" (A5, Marketing Manager and
> MC Centre Coordinator, 20/01/2006).

The project was initiated by the Managing Director of Management Consultancy (A2)
to strengthen the area of Procurement within Management Consultancy. However, no
clear direction for the project was given and after two meetings the project was
abandoned and was never brought back into the overall programme. The research
consultant attributed the stagnation of the project to the project leader's lack of time to
steer it.

> "Yes, A2 [project leader and Managing Director of Management Consultancy] was
> fighting other battles" (A4, Research consultant, 02/03/2004).

The PFI project was considered a failure since "nobody really put any effort into it I
think" said the Director of Strategic Consultancy (H8, 12/04/2006). Across the
company the initiative did not made any impact.

> "The PFI funded one, I can't remember what happened with this but I think (A2)
> was leading it at one point wasn't he?" (P20, Director of Business Transformation,
> 23/01/2006).

Table 7.10 summarises the reasons for the failure of the PFI project.

Content barriers in PFI		People barriers in PFI	
Unrealistic theme	An area where MCompany did not have a well-developed capability and complex specialist subject.	*Lack of project leadership*	The project leader did not pursue this research.
Sector-specific	PFI is primarily applied in construction.		

Table 7.10 Barriers in the PFI project. Source: Compiled by author.

7.6. Project 5. Business transformation

Business Transformation was a group within MCompany's Management Consultancy.
It was founded with the idea of complementing the portfolio of services of Management
Consultancy, realising that much of the implementation of partnership approaches or
strategically managing the assets had an element of change management.

The aim of the Business Transformation group is to help public and private
organisations to manage their business transformation projects. In particular, it advises
on new models of service delivery, Best Value reviews, and performance management.
The areas included in the Business Transformation scope were change management,
programme management, project management, relocation management, capital project
management, business transition, management support and interim management,
performance management, and management training and development.

7.6.1. The content of BussT project

The Business Transformation was a capability widely applicable to MCompany's business as the following quote illustrates.

> "We're doing that [business transformation] big time … they've already done it in Essex, we've got the business transformed, we've got the business transformation team involved in the new management structure here, so Carol [fictitious name] is on our management board now … and the idea is to get business transformation imbedded in what they do" (H17, Director H Highways, 12/07/2006).

Business Transformation as a topic area for research *was very broad* (H12, Director of Business Transformation, 09/03/2006) and a clear focus or question for the project was never pursued. Despite the potential of this area, this project failed to initiate.

7.6.2. The people in the BussT project

The MC Centre Steering Group agreed to undertake a research project in the area of business transformation in 2002 (MCC proposal research teams for projects 22/10/2002). Despite the clearly identified business need and the support from the MC Centre Steering Group, the Director of Business Transformation did not make any attempt to take this project forward. The following quote describes an episode that affected the project leader and, as a result, the overall project.

> "I went up with the Director of Strategic Consultancy [H8] to see the Director of AMRC [A6] up at Cranfield and we talked about the link between business transformation and HRO's … My interest was what is the process for creating an HRO from where an organisation is currently and (A6) and I had a very interesting conversation and he showed me some thinking that he'd already done on the transformation of a business into an HRO which I was very disappointed with because it showed that he'd been working quite hard on this and hadn't shared any of that thinking and was not prepared to formally share it with MCompany because he wanted more money" (H12, Director of Business Transformation, 09/03/2006).

The aims of each of the projects were defined jointly between MCompany and Cranfield within the boundaries of the agreed contract. This contract specified that:

> The financial contribution from MCompany will support the agreed contribution of the Director of AMRC to the direction and management *of the research carried out by the MC Centre*, the administration of the MC Centre, the provision of office space and other facilities to the MC Centre and to the MCompany Research Fellow [Research Consultant A4] and the travel, subsistence, computing and other costs involved" (MCompany–Cranfield agreement 01/04/2001, p.2) (Emphasis added).

This clause of the contract made explicit that MCompany's funding would be directed to conducting research within the MC Centre of which the scope would be specified by the Steering Group. The Director of Business Transformation did not suggest a research theme to be pursued within the scope of the MC Centre.

The question of the financial arrangements between MCompany and Cranfield School of Management also warrants further explanation, since they caused a number of misunderstandings during the collaboration. The contract between MCompany and Cranfield School of Management specified that,

> "MCompany shall make an annual contribution of £40,000 … of this amount twenty five thousand pounds (£25,000) plus Value Added Tax will be a fixed contribution and the balance representing the recovery of expenses incurred on agreed activities will be a variable contribution"(MCompany–Cranfield agreement 01&04&2001, p.2).

The Director of AMRC (A6) felt this funding to be a modest contribution to the MC Centre given the time and effort incurred, particularly by the Cranfield team. This level of funding fell short compared with other contributions aimed at establishing research centres. For instance in 2006 the School of Management received £1.25 million to establish a research Centre for Entrepreneurial Performance and Economics (Cranfield School of Management, 2006). The Director of the AMRC recognised that,

> given the discrepancy between these figures and the MCompany input it fell to me to decide what was and what was not appropriate to provide. My view was that we should meet contractual obligations and also add to the funding through EPSRC grants (which we did) and then respond to the company if approaches were made but not take substantial development initiatives (A6, Clarification of a comment from interviews 11/09/2006).

The Director of Business Transformation did not engage in the MC Centre activities, nor did he express his interest in pursuing the BussT research project. The aims and scope of the MC Centre were poorly understood, leading to the creation of *unrealistic expectations*. It was not within the remit of the centre to 'lecture' participants individually on any given topic, regardless of a single individual's potential interest in a specific subject matter. The confusion about the aims and objectives of the research projects, and also about the MC Centre in general, was a theme that appeared repetitively in the interviews.

After the conflict generated following the Director of Business Transformation's (H12) visit to Cranfield, he commented:

> "I went back to A2 (Managing Director of Management Consultancy and Co-director of the MC Centre) and I said this really isn't working for me, if the Director of AMRC is going to continue working with the Director of Strategic Consultancy [H8] on HRO that's fine but believe me we're not going to get a result on business transformation out coming out of the HRO work" (H12, Director of Business Transformation, 09/03/2006).

The *Managing Director of Management Consultancy did not address this issue* with the Cranfield team, leaving BussT a project that effectively "did not get a result".

The Director of Business Transformation was also in a situation that made it *difficult to devote time* to knowledge and learning activities, as he "was in a fee-earning business and had a lot of demands on his time for earning fees and that sort of thing" (P20, Director of Business Transformation, 23/01/2006). The Research Consultant claimed that the reason why the project did not even start is because,

> "[The director of Business Transformation H12] wasn't selling any work and there wasn't any appetite in the business to look at it, he was probably the wrong person" (A4, 20/03/2006).

The table below summarises the barriers found in the Business Transformation project with regards to content and people.

Content barriers in Business Transformation		People barriers in Business Transformation	
Very broad	Difficult to focus and to dedicate scarce resources.	*Personal conflict*	Resentment caused by misunderstanding that led to an unwillingness to collaborate.
		Lack of time	Job pressures precluded devoting more time and effort to the project.

Table 7.11 Barriers in the Business Transformation project. Source: Compiled by author.

The episode described in the findings of the Business Transformation project, was not exclusive of this project or of the Director of Business Transformation. In the course of the MCompany–Cranfield collaboration, various other instances occurred where unclear objectives or unrealistic expectations created confusion. Other subtle factors such as stereotyped views of each other and internal disconnections within MCompany hindered knowledge and learning. These and other cross-project aspects are presented in the next sub-section.

7.7. Summary

This chapter has offered a rich and detailed account of enablers and barriers for knowledge and learning in each of the projects. The practices of the projects were different, ranging from a no-planned approach in HRO to a well-planned arrangement of meetings in PPP and a half plan in Asset Management. PFI and Business Transformation did not have any feasible plan. Similarly the content of each project was diverse, HRO being the one considered the most interesting and relevant, and the rest relevant but only partially interesting, although all the projects fitted the MCompany mission. The people dynamics were also very different, tense in the case of HRO and friendly in the PPP, Asset Management and PFI. Business Transformation was also marked by some personal conflict.

The question that emerges is, "How did all this affect the knowledge and learning processes?" In order to explain the differences across projects and their impact on knowledge and learning the next chapter presents a cross-project analysis.

8. CROSS-PROJECT ANALYSIS

8.1. Introduction

The aim of this chapter is to present a cross-project comparison of the findings reported in chapter 7, using the dimensions 'content', 'practices' and 'people' derived from the systematic review (see chapter 4). The context for the projects was very similar (see chapter 6). The academic team was the same across all of the projects. The academic research reviewing the existing available evidence across projects was conducted by the same researcher. The Cranfield Senior Research Fellow also acted as project manager in all the research projects. Similarly, the MC Centre provided the organisational structure within which the projects were run. Despite the arrangements and the academic team within each project being the same, one project was considered successful, one partially successful, one largely unsuccessful, one was abandoned and the last project failed to initiate. How could each project attain such different levels of success in terms of learning and knowledge? This question is addressed in this chapter.

This chapter focuses on comparing the projects, analysing how the different enablers and barriers led to the outcomes of each specific project. The cross-project analysis is important as it contributes to understanding the significance of the findings of each project (Miles and Huberman, 1994), and avoiding what Firestone and Herriot (1983) call 'radical particularism'. Overall, the cross-project comparison is an analytical approach that preserves uniqueness and entails comparison (Noblit and Hare, 1988).

A fundamental reason for conducting cross-case analysis is to deepen the explanation and comprehension of the case, enabling the identification of the mechanism that occurs under certain conditions. Through the comparison of multiple cases the researcher can help pin down the specific conditions under which a phenomenon will occur, in relation to the context in which it occurs (Miles and Huberman, 1994). Qualitative comparative analysis (QCA) can be used to generate explanations by systematically making comparisons across cases, and involves representing each case as a combination of causal and outcomes conditions (Ragin, 1987). In this chapter, tables are used to facilitate the analysis of the presence or absence of attributes of interest (Fielding and Lee, 1998) in relation to 'content', 'practices' and 'people'. In particular, a table for each of these dimensions is presented displaying the analysis of emerging key elements.

Having multiple units of analysis and undertaking a cross-project analysis enables the identification of negative cases (e.g. projects PFI and BussT) which may strengthen theoretical insights. In this chapter, special emphasis is placed on identifying differences and similarities across projects and analysing these in the context of each project's outcomes. For instance, critical enablers are likely to be those that being present in successful projects are not present in unsuccessful projects. Critical barriers are likely to be those that being present

in unsuccessful projects are not present in successful ones. The understanding of the data is increased when patterns and trends that have been identified in some projects are considered in other projects. As Patton (2002) claims, this analysis may prove 'rules', or alternatively broaden, change or cast some doubt on them. The negative cases, or cases that do not fit the identified patterns, may be revealing and "add credibility by showing the analyst's authentic search for what makes most sense rather than marshalling all the data toward a single conclusion." (Patton, 2002 p.555).

The chapter starts by classifying the outcomes of each of the projects according to informant's perceptions and also by the level of utilisation of the research findings. Both elements are used to offer a justification for claiming that one project was considered successful, one partially successful, one largely unsuccessful, one was abandoned and the last project failed to initiate

8.2. The learning outcomes of the projects

The case study explored in this thesis provides an opportunity to identify the enablers and barriers to learning and knowledge in academic-management consulting research collaborations. The organisational context was similar across all the five projects. However, the results of each project varied significantly. Some were deemed successful whilst others were thought to have failed in accomplishing their objectives. The words 'success' and 'failure' are two extreme poles of a continuum and are explained in more detail in this section to avoid misinterpretations of the empirical data.

In this section, a research project will be deemed 'successful' if it is perceived successful by the majority of participants involved, and there is evidence of outputs of research utilisation. In chapter 2, a summary of individuals' perception of the degree of success of the projects was presented. It was concluded that project 1 (HRO) was successful, project 2 (PPP) was partially successful, project 3 (AssM) was largely unsuccessful, project 4 (PFI) was abandoned and project 5 (BussT) failed to initiate. In the following paragraphs, Beyer and Trice's (1982) framework of research utilisation is outlined to assess the outcomes of the projects in terms of how they were used and their impact. Beyer and Trice's framework has been widely used and it provides a useful perspective to think about the possible outcomes of these research projects.

Beyer and Trice (1982) distinguish between symbolic, conceptual and instrumental uses of knowledge. *Instrumental use* involves acting on research results in specific, direct ways. Instrumental use is mediated by individual's behaviour repertoires (Weiss, 1981), which means that in order to enhance instrumental use, individuals must have the capability to act upon research findings. Menon and Varadajan (1992) label this use action-oriented, which refers to activities, practices, or policies that can be directly linked to the findings of research. *The conceptual* use of research involves using research results for general clarification, therefore influencing actions in indirect ways. Conceptual use is mediated by processes such as interpretation, contextualisation, refinement, reassessment and synthesis. *Symbolic* use entails using research results to legitimise positions, or using research results to justify actions. This type of use has also been called 'strategic' (NCDDR, 1996) because is related to the use of knowledge to achieve specific goals such as power or position. Symbolic/strategic use will be used together throughout the chapter.

In Table 8.1 the perceived success of each project and the evidence of their levels of utilisation are combined to offer a justification to claim that the HRO project was successful, the PPP was only partially successful, the Asset Management (AssM) was largely unsuccessful, the private-finance initiative (PFI) abandoned and Business Transformation (BussT) failed to initiate.

Success criteria	Project HRO	PPP	AssM	PFI	BussT
Symbolic or strategic use	Research findings are used by the Director of Strategic Consultancy to strengthen his newly-created unit. Reputation and profile are recognised as motivations that underpin the engagement in this project. Press releases, professional articles and columns in the news promoted a strategic debate on the need for 'failure free' infrastructure. HRO ideas were also used in bids and proposals for new work. The project was also used to prospect new clients. Practitioner articles, presentations and reports were produced in addition to numerous events.	The research was not widely disseminated internally. A decision was made to focus on the managerial aspects of PPP (how to manage PPPs) rather than the political/business case (should PPP be used to deliver public services?). The contents of the research report were used in the process of bidding for new work.	There were no significant research findings that could be used to influence in any strategic way.	Research was intended to benefit the Procurement unit of the company.	The intended beneficiary was the Business Trans-formation unit.
Conceptual use	Research findings are used to provide a framework with which assess business performance. HRO research is also used to help understand how errors in organisations and systems may become large failures. This research is used to argue that organisations must adopt high reliability principles in the configuration of the sovereign parts of their business.	A conceptual dynamic model of how to manage PPPs was produced and presented at an event with clients and in discussion with prospect clients for new work.	Rather than research findings, the 'process' to arrive at them was insightful. Discussions about the impact of managing assets on the overall organisational performance were described as useful.	Only initial discussions to define the scope of the project.	Only a discussion on transforming organisations into HROs.
Instrumental use	MCompany used this research to design and implement an organisational change programme.	A report was produced when the project was completed. This report was sent to various clients.	The project did not produce significant research findings. Only in the research process, position papers, presentations exploratory scoping research were produced.	No research findings produced.	The project was not initiated.
Individual's perception of success	All interviewees perceived this project as successful (see chapter 2 for the evidence).	Only the project leader and project sponsor recognised the project as successful. Some informants provided mixed assessments and a few rated the project poorly (see chapter 2).	The overall perception is that the project did not achieve its intended outcomes. The co-production process was, however, found valuable (see chapter 2).	Negative (see chapter 2).	Negative (see chapter 2).
Overall assessment of the project	SUCESSFUL	PARTIALLY SUCCESSFUL	LARGELY UNSUCCESFUL	PROJECT WAS ABANDONED	FAILED TO INITIATE

Table 8.1 Assessment of level of success or the different projects. Source: Compiled by author

8.3. Cross-project comparison of the content

This section compares the content or subject matter across all research projects. It first offers a summary of the results obtained in the repertory grid interviews. First, an example of the analysis of an individual grid is offered, illustrating the types of analysis that may be drawn using this method. Since the repertory grids contained different elements (management ideas) these are not comparable. Cross-grid analysis using quantitative techniques can only be performed when the elements being compared are the same. However, since five elements (the five research projects) were common to all grids, these ideas have been compared and results presented in this sub-section.

A key emerging finding from both the repertory grids and the interviews is the significance of the interplay between relevance, interest and rigour. None of these aspects alone seems to be sufficient to maximise the likelihood of research utilisation and to enhance learning and knowledge, but a combination of them is deemed necessary. The data also suggests that ideas that are generally applicable, not specialised, tended to be perceived as more relevant and interesting.

8.3.1. Results of the perceived content from repertory grid

8.3.1.1. Example of a single grid analysis

Figure 8.1 below shows an example of a completed grid of one of the interviewees as displayed in WebGrid III. The 'emerging' constructs appear on the left and the 'contrast' or 'pole' is located of the right of the grid. In total, nine constructs are elicited. Each of the columns corresponds to one element. Of the total 10 elements, five were supplied by the researcher (High Reliability Organisations, Public Private Partnerships, Asset Management, Public Finance Initiative and Business Transformation) and five selected by the individual. In this particular case the participant selected as relevant ideas: HRO, Asset Management, Business Transformation, Situational leadership, organisational learning. The not relevant ideas were PFI, PPP, Lean Organisation, Porter's 5 forces, and Performance Measurement.

Figure 8.1 Example of a completed grid. Source: compiled by author using WebGrid III

Most repertory grid software packages contain *cluster analysis* functionality. Cluster analysis is a technique for highlighting the relationships between constructs and elements in a grid so that they become easily visible (Jankowicz, 2004). Elements and constructs are reordered to offer a rapid and simple way of analysing similarity. A dendrogram is normally generated, indicating a percentage of similarity among constructs and elements in a graphical way. The statistical procedure that underpins this calculation is known as the FOCUS algorithm (Shaw, 1980; Shaw, 1981; Thomas, 1977).

Figure 8.2 shows the cluster analysis and the resulting dendrogram illustrates that this individual perceives PPP and PFI as similar (clustered closely). This result is highly consistent with the nature of both PPP and PFI. Both are different schemes to fund and deliver services or large projects. The dendrogram also shows similar appreciation of situational leadership and organisational learning both of which have arguably a strong focus on people. Equally, the person who completed the grid construed similarly Porter's Competitive Forces and Performance Measurements. Both can be seen as analytical approaches to assess aspects of business performance.

From the grid, the close clustering of the 'general' and the 'related to funding and finance' constructs suggests that the person perceives ideas with a focus on finance as needing less adaptation and customisation than ideas related to people and processes.
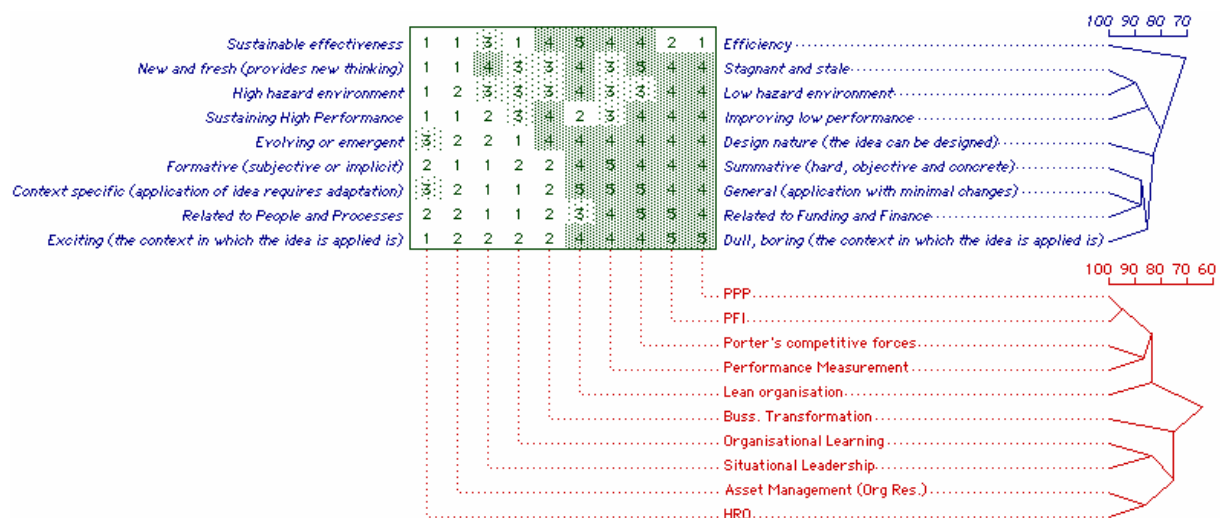
Figure 8.2 An example of cluster analysis. Source: compiled by author using GridWeb III

Another established way to analyse the relationships among the constructs is by *principal component analysis* (PCA). PCA is "a technique for finding a weighted composite of variables such that the weighted composite accounts for as much variance as possible" (Fransella, Bell et al., 2004 p.111). Principal components describe the patterns of variation (or components) of a set of multivariate data in terms of uncorrelated (linearly independent) variables. Techniques such as PCA or hierarchical clustering (see Figure 8.2) are based on measures of associations between constructs, such as correlations, distances, etc. and assume that such measures are essentially symmetrical (Fransella, Bell, et al. 2004, p.88). Most packages such as WebGrid III have visualisation tools to represent conceptual maps derived from principal components analysis and an example is shown in Figure 8.3.

Figure 8.3 contains a horizontal dotted line that represents the first component and the vertical the second component. The length of the line reflects the amount of variance in the ratings on that construct. 'Efficiency – sustainable effectiveness' is the construct with the highest level of variance. This means that the person would clearly differentiate different management ideas against this construct. The angle between any two constructs lines reflects the extent to which the ratings of elements on those constructs are correlated, i.e. the smaller the angle, the more similar the ratings. For instance the constructs 'formative – summative' and 'evolving – design nature' are highly correlated (Jankowicz, 2004 p.129).

The position of the elements facilitates an analysis of relationships amongst them. The distance between any two elements reflects the ratings each element received on all the constructs. Two elements that are close together in the graph received similar ratings. For instance in Figure 8.3 'HRO' and 'Asset management – Organisational resilience' received similar ratings. Principal component analysis is particularly useful when the differences between elements may carry special meaning. The principal component analysis shows the relationships between all components. The significant plots are by convention those that account for 70%-80% of the variance (Jankowicz, 2004 p.131).
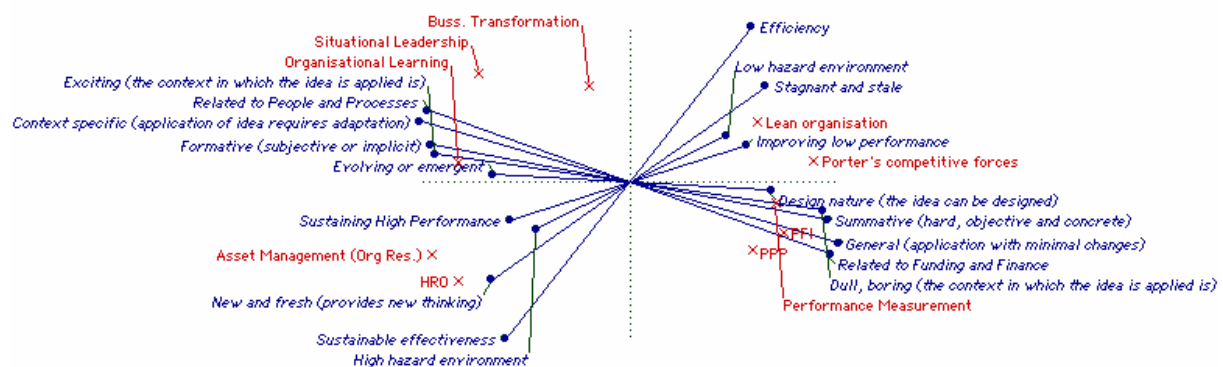
Figure 8.3 An example of principal component analysis graph. Source: compiled by author using WebGrid III.

8.3.1.2. *Key constructs of management and business ideas*

One of the outcomes of the repertory grid research is a detailed characterisation of the attributes that informants used to construe and make sense of the ideas. The repertory grids were content-analysed by systematically looking at the constructs used by the informants and their narratives to identify the various themes they expressed (Holsti, 1968; Neuendorf, 2002). In total, 162 constructs were elicited. From these, 104 were expressed differently. According to their meaning, constructs that were similar were grouped into 43 groups (see appendix E Table of constructs).

After the categories were derived, the category system was subject to a reliability check. In content analysis there are two forms of reliability: reproducibility (or the extent to which other people make the same sense of the constructs) and accuracy (or consistency in the use of the categories) (Hill, 1995 pp.105-106). The initial classification was given to two independent researchers who were asked to suggest an independent classification. They were also asked to examine the way the constructs had been grouped and invited to suggest alternative groupings. Based on the independent researchers' classifications and suggestions, the

category system was amended accordingly. This process was replicated in a second iteration. The first iteration of the reliability check achieved 48.89% and 57.78% agreement with each researcher respectively. In the second iteration, these percentages increased to 88.37% and 95.35%, both considered acceptable (Jankowicz, 2004). For details of the reliability check, see appendix F.

Table 8.2 summarises the result of the analysis. As described in chapter 5, the average number of mentions and average variability was used as criteria to justify the importance of a construct. The *average variability* for constructs was *11.08* and the *average mentions 3.70*. Thus, constructs above the average in both mentions and variability are considered key and appear bolded in shaded cells.

No.	Construct/attribute	Variability	Mentions	% Respondents	Key Construct?
1	**Tangibility**	**11.81**	**13**	**72%**	**Yes**
2	**Relevance/interest**	**13.43**	**11**	**61%**	**Yes**
3	Novelty	8.78	11	61%	No*
4	Socio-technical	9.33	10	56%	No*
5	**Internal-external focus**	**12.03**	**8**	**44%**	**Yes**
6	**Definition**	**11.42**	**8**	**44%**	**Yes**
7	**Measurability**	**12.22**	**7**	**39%**	**Yes**
8	Means-ends	11.00	7	39%	No*
9	Nature of change	10.96	7	39%	No*
10	**Level of analysis**	**11.86**	**6**	**33%**	**Yes**
11	Scope	10.64	6	33%	No*
12	**Generalisability**	**18.19**	**4**	**22%**	**Yes**
13	**Stakeholder involvement**	**13.84**	**4**	**22%**	**Yes**
14	Temporal	10.73	4	22%	No
15	Managerial-financial	10.70	4	22%	No
16	Complexity	10.70	4	22%	No
17	Focus on failure vs. success	9.58	4	22%	No
18	Compliance	13.51	3	17%	No
19	Collaboration	13.07	3	17%	No
20	Repetition	12.38	3	17%	No
21	Strategic orientation	11.89	3	17%	No
22	Flexibility	12.62	2	11%	No
23	Creativity	12.13	2	11%	No
24	Investment required	11.61	2	11%	No
25	Associated risk in innovating	10.08	2	11%	No
26	Theoretical-applied	9.70	2	11%	No
27	Locus of capability	7.97	2	11%	No
28	Type of value generated	7.08	2	11%	No
29	Personal development	15.21	1	6%	No
30	Usage	14.22	1	6%	No
31	Management support	12.97	1	6%	No
32	Social impact	11.68	1	6%	No
33	Problem-solution focus	11.17	1	6%	No
34	Origin	11.08	1	6%	No
35	Perceived effectiveness	10.92	1	6%	No
36	Closeness to personal values	10.61	1	6%	No
37	Scale of change	10.03	1	6%	No
38	Connotation	9.96	1	6%	No
39	Forward looking	8.95	1	6%	No
40	Implementation approach	8.81	1	6%	No
41	Learning needed	8.65	1	6%	No
42	Profitability	7.85	1	6%	No
43	Hazard of the environment	5.21	1	6%	No

NOTE:	*Average variability of constructs*	*11.08*
	Average number of mentions	*3.70*

Table 8.2 Identification of key constructs. Source: compiled by author

Constructs that are not key according to this criteria but fall near, or have a distinctive characteristic, are marked with an asterisk (*). A full explanation of how these constructs was devised and is given in chapter 5, section 5.5.3 and a detailed explanation of what each of these constructs means can be found in appendix E: Table of Constructs.

Based on this analysis, eight attributes are critical to our understanding how the consultants and academics involved in the MC Centre research programme construe and make sense of management ideas. The key attributes are: 'tangibility', 'relevance', 'internal-external focus', 'definition', 'measurability', 'level of analysis', 'generalisability' and 'stakeholder involvement' (for details and definitions, please see appendix E).

Table 8.3 presents the mean of the scores for the key constructs for each of the five projects. In addition, 'novelty' and 'scope' have been included because these appeared significant in the interviews. The means of the ratings of the five supplied ideas range from one (close to the emerging construct) to five (close to the pole). The 'emerging' construct is the attribute that an individual uses to describe an element. The 'pole' is the construct that an individual sees as being opposite to the emerging.

It is worth mentioning that some constructs cannot be considered key, given that their variability is lower than 11.08 and/or have been mentioned less than four times. However, their values are near to the values of key constructs. This is the case of 'socio-technical', 'means-ends', 'nature of change', 'scope', 'collaboration' and 'compliance'.

Looking at the identification of key constructs, '*tangibility*' has the highest relative level of mentions and has significant variability. Tangibility is a construct that was highly mentioned as it distinguishes abstract concepts and approaches in management (less tangible) from methods, techniques and tools (more tangible).

For the construct '*tangibility*', the lower the mean the more tangible it is, given that one is the emerging construct (tangible) and five the pole or contrast (intangible). Thus 'asset management' is considered a management/business idea significantly more tangible than 'high reliability'. The reader should note that the repertory grid analysed the perception of 'management ideas' (or the themes underpinning the projects) not the projects themselves. For instance, individuals rated the management idea 'business transformation' against a number of constructs. Individuals did not rate the project itself, since this project was not accomplished.

Related to 'tangibility' is the construct '*definition*'. The 'private-finance initiative' was the most defined idea, which is coherent with its nature. Private-finance initiative is primarily a mechanism to fund large capital projects and is based on specific financial and forecasting techniques. By contrast, 'high reliability' and 'business transformation' are perceived as more open, intuitive, and less defined. This seems to be related to '*measurability*' in the sense that both 'high reliability' and 'business transformation' are perceived the most difficult to measure. 'Private finance initiative' is the easiest to measure, followed by 'asset management' and 'public private partnerships'.

The construct '*relevance/interest*' is the second key construct and one of the most significant for this thesis. In chapter 7, the analysis of interview data, particularly for the HRO project,

distinguished between 'relevant' and 'interesting'. However, during the elicitation of the repertory grid, informants used these two concepts interchangeably. This construct is important as it was mentioned by 11 participants and has an average variability of 13.43, which discriminates well amongst elements (management ideas). The analysis of the mean in these constructs across the projects indicate that the ideas "high reliability organisations', 'business transformation', and 'asset management' were perceived more relevant/interesting than PPP, and significantly more than PFI.

Key construct/attribute	Emerging (1)	Pole (5)	'High reliability organisation' design	'Public-private partnerships'	'Asset Management'	'Private finance initiative'	'Business Trans-formation'	Mentions
Tangibility	Tangible	Intangible	3.08	2.77	1.77	2.23	2.92	13
Relevance/interest	Relevant / interesting	Irrelevant not interesting	2.18	3.27	2.36	4.00	2.09	11
Novelty	New / novel	Old	2.09	3.36	3.27	3.64	2.55	11
Internal-external focus	External / client focused	Internally focused	3.38	1.88	2.63	1.50	3.75	8
Definition	Tightly defined	Open / less defined	3.00	2.63	2.50	1.38	3.25	8
Measurability	Easy to measure	Hard to measure	3.57	2.86	2.71	1.71	3.29	7
Level of analysis	Personal / individual	Organisational	4.33	4.83	4.67	5.00	3.83	6
Scope	Common / general	Specific / narrow	2.83	2.67	3.33	3.67	2.33	6
Generalisability	Context specific	Generally applicable	3.50	1.75	3.00	2.75	2.50	4
Stakeholder involvement	High number stake-holders	Low number stakeholders	2.25	2.75	3.50	1.75	3.50	4

Table 8.3 Means for the key constructs across projects. Source: compiled by author.

The construct '*novelty*' indicates that high reliability organisation design (HRO) is perceived to be the most novel idea (mean = 2.09) of all five. The most successful project was HRO, so taking together 'relevance/interest' and 'novelty' of the idea, it appears that an idea that is perceived to be relevant and novel, may have contributed to a better outcome.

In terms of the '*internal-external focus*' 'high reliability' and 'business transformation' are ideas that have some internal focus, which means that they are ideas that consultants can use or apply in their own organisation.

The '*level of analysis*' construct, like 'tangibility', differentiates management ideas that have a focus on individuals from those that have a focus on organisations. Repertory grid data

confirms that most of the ideas are perceived to have a clear organisational focus, except 'business transformation' and 'high reliability organisations' that have some focus on people.

Looking at the values of the construct '*scope',* the ideas 'business transformation', 'high reliability' and 'public private partnerships' emerge as the most common and general ideas indicating that the scope of application is wider and less specialised. Conversely, 'asset management' and 'private finance initiative' are more specific, focused and narrow.

The '*generalisability'* construct refers to the extent to which an idea is applicable to a variety of contexts. 'Private public partnership' logically appears as the most sector-specific given its application in provision of certain public services by private organisations. Interestingly, 'high reliability organisation' design is perceived to be applicable to a number of sectors (mean= 3.50).

Lastly, the construct '*stakeholder involvement*' indicates how only in 'private finance initiative' the number of stakeholders or organisations is relatively high, reflecting the fact that in PFI deals, banks, investors, contractors, and clients come together to deliver an asset and subsequent service. 'High reliability' has a mean of 2.25 which may reflect discussions held within the project team, arguing that a system is reliable if all its components (or organisations are reliable). The figure of the mean of PPP (m=2.75) reflects that PPP always involves more than one organisation/stakeholder.

The 'high reliability organisations' project is an idea perceived relevant and novel (lowest mean= 2.09), but most importantly, has medium ratings in most of the other constructs. This makes it an idea that can be characterised as tangible, relatively open, difficult to measure, holistic and applicable across sectors. Overall, it appears that 'high reliability organisations' is conceptual and holistic and addresses issues of general interest in various contexts, including one's own organisation. The HRO project was the most successful project. HRO triggered much interest across the company, and facilitated interesting debates that led to insightful conclusions. All these attributes stimulated "interesting high level thinking" (A4, Research Consultant, 02/03/2004) ideas.

The 'public private partnership' idea was perceived to be interesting, more defined, with application to limited sectors, and of limited novelty. It was also primarily applicable to organisations other than to one's own company. Overall, it seems that these attributes make it less discussable, limiting the opportunity to bring together different perspectives from which a new one can emerge.

'Asset management' is found to be a tangible, tightly defined, relatively easy to measure idea. It is considered a relevant and interesting idea, perhaps reflecting the influence that the first initial research project, the Strategic Management of Long Term Assets (SMoLTA) had within the company, which in the words of the Director of AMRC "created a new language" (A6, 14/03/2006).

'Private finance initiative' is overall the most defined, specific, measurable and externally oriented of all the five management ideas. This suggests that private finance initiative does not leave much room for discussion, that this idea may be highly explicit, thus limiting

opportunities to inform issues of wide managerial relevance. It is in fact rated as highly irrelevant.

The last idea, 'business transformation' is, interestingly, the idea perceived as mostly relevant. It is also perceived as relatively novel, open and hard to measure. The means of the repertory grid data for 'business transformation' characterise it as a general idea with a strong internal application.

Figure 8.4 shows the five ideas plotted against each construct, providing a graphical comparative analysis of them. The remainder of this section focuses on comparing the different projects by drawing on the findings from the previous chapter, where semi-structured interviews and document analysis data was used in conjunction with repertory grid.
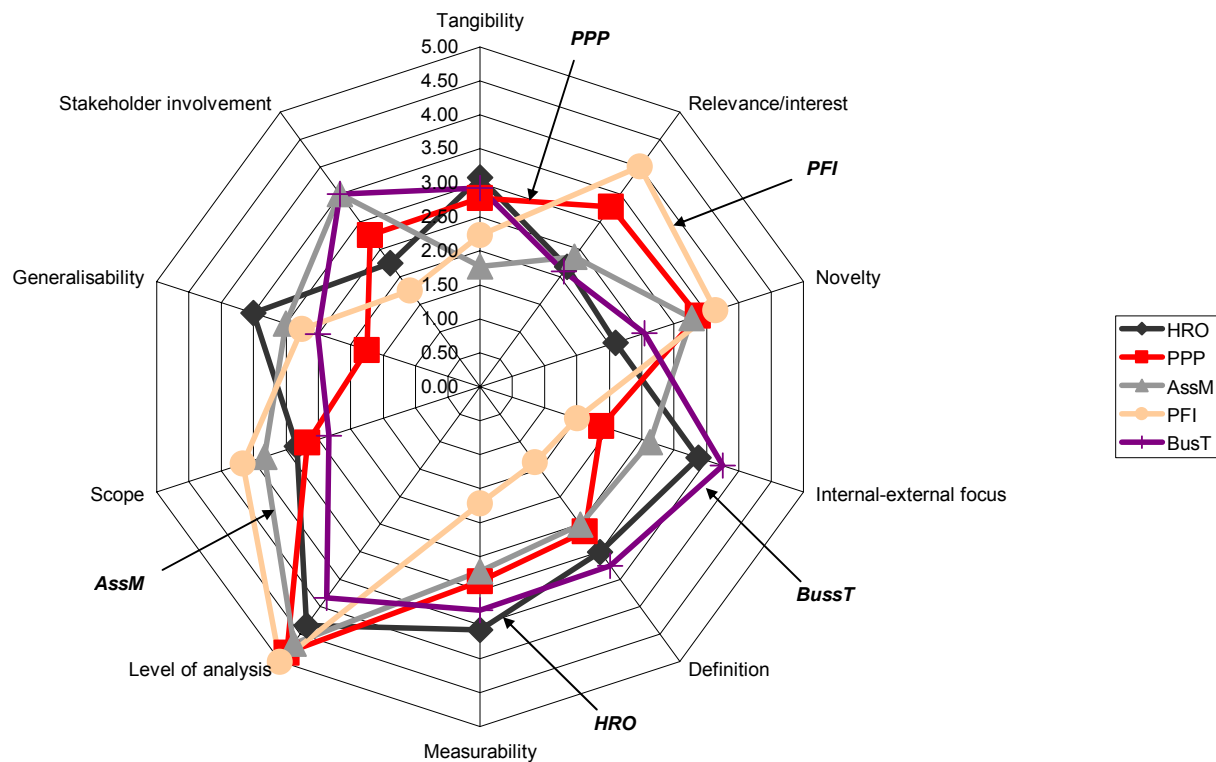
Figure 8.4. The ideas of the projects against key constructs. Source: compiled by author.

8.3.1.3. *The relevance of management ideas*

One of the key objectives of the repertory grid interviews was to gain an understanding of the attributes that consultants use to make sense of business and management ideas. In particular, repertory grids were used to identify constructs associated to interesting (or otherwise) management ideas. The table below details how participants judged the relevance of the projects in total numbers and in percentage.

Elements	Total Mentions	Relevant (count of)	% Relevant	Not relevant (count of)	% Not relevant
High reliability organisations (HRO)	18	17	94.44%	1	5.56%
Asset Management (AssM)	18	13	72.22%	5	27.78%
Business Transformation (BussT)	18	10	55.56%	8	44.44%
Public Private Partnerships (PPP)	18	7	38.89%	11	61.11%
Private Finance Initiative (PFI)	18	1	5.56%	17	94.44%

Table 8.4. Perception of relevance of the five research projects

Table 8.4 was developed by analysing the ideas that interviewees classified as 'relevant' and 'non relevant' prior to starting the elicitation of constructs in the repertory grid interviews (see the section on repertory grid in chapter 5). The figures in the table show how informants grouped the ideas into 'relevant' vs 'not relevant'. These figures must be interpreted in the context of the arguments that consultants employed to construe relevance, which are presented below. In addition in chapter 9, these results are discussed using theory to help explain these results.

The element HRO was considered *relevant by all except one* interviewee. HRO was the most successful project, which suggests some relation with the perceived relevance. What seems paradoxical is that only seven consultants (38%) considered public-private partnerships as a relevant topic. The PPP project was partially successful and MCompany's Managed Services, most of which are delivered through various partnership schemes, represents 56.98% of MCompany's turnover and 41.63% of profits (MCompany Report & Accounts 2002.pfd 31/12/2002). The area that was perceived irrelevant was PFI funding, which may help understand why, although the project was proposed and initiated, it really never continued. Asset management (AssM) is also an interesting case to examine. The project was perceived largely unsuccessful, and despite the research in this area, was not finished; the discussions relating to scope and focus of its content were perceived to be highly valuable, and relevant to MCompany's business. Asset Management has traditionally been a key area of business for MCompany, thus its high rating in relevance. Business Transformation (BussT) appears to be a relevant area for MCompany although the results are rather inconclusive and difficult to contextualise, since the BussT project was not initiated.

The selection of management ideas yielded a total of 65 different elements, some of which were mentioned only a few times. For instance, apart from the elements described above, *relevant* ideas were: organisational culture and leadership (three counts), change management (two counts), consultant-client relationships (two counts), motivation theories (two counts), regulation and empowerment & delegation (two counts); the remaining relevant ideas were only mentioned once. *Irrelevant* ideas mentioned by interviewees were: downsizing (five counts), total quality management (four counts), organisational learning (three counts), performance measurement and balance scorecard (two counts), knowledge management (two counts), information management & data analysis (two counts), inter-organisational knowledge transfer (two counts), and six sigma (two counts), etc.

When asked about the reasons to classify one idea as relevant, most interviewees referred to the extent to which the idea is related to their business and experience. Ideas were relevant

because they could be applied to the consultant's sphere of activity (H15, Senior Consultant - LG Services, 26/01/2006), particularly at present but also in terms of recent experience,

> "I thought Asset Management was going to be relevant because that's where we were as an organisation. The PPP because that's the business MCompany was in. Business Transformation because a large part of these contracts is about how you transform things." (A2, Managing Director of Management Consultancy, 02/02/2006).

But consultants also looked at the relevance of ideas in terms of the opportunities that they provided to generate new business (P20, Director of Business Development 23/01/2006). In MCompany, a firm where an emphasis is placed in long-term relations with key clients (MP corporate plan 01/01/2004), the perception of relevance is strongly influenced by 'what the idea means for a client'. An idea is likely to be perceived as relevant if it enhances the relationship with a client and if it is an idea that clients are embracing.

> "You've got six sigma there. If the centre was focusing on the rail sector, Network Rail has taken up six sigma as one of their main processes, then six sigma would be relevant, but if you look at it from a MP point of view, it is something that was not across the whole company." (A2, Managing Director of Management Consultancy, 02/02/2006).

'Current' and 'interest' ideas where often seen as synonymous to 'relevant' as the following quote illustrates.

> "During the time we had the Centre I'd say most relevant was HRO … and that's because it sparked interest, and it was newer and different… What the centre was looking to do was to talk about things which were current and relevant, and interesting and exciting, and which managers are tackling now or knowing that they will be tackling in the future." (A3, Non-Executive Director, 24/01/2006).

The relevance of ideas was also reliant upon a balance between specificity and generalisability. Ideas that were too general were not seen as relevant, but equally, those that were very specific or limited. An illustrative quote is provided below. The Research Consultant chose Organisational Learning (OL) as a 'non relevant' idea, arguing that,

> "Learning organization, I would be very interested to know what OL brings that OD [Organisational Development] does not. I think it is very limited" (A4, Research Consultant, 20/03/2006).

8.3.2. Critical enablers and barriers of the content

Data from semi-structured and repertory grid interviews revealed that *the perception of relevance* in management consultancy is strongly influenced by the consulting *company's client base*. This is understandable, given the nature of the service offered by the company. A project is likely to be perceived as relevant if its content addresses issues that clients are facing. This connection between the concept and the issue is not automatic and examples and cases are instrumental in making such a link. For instance, in the HRO project the idea of 'failure free' organisational performance in air traffic control, nuclear plants or aircraft carriers was not relevant and some consultants argued that MCompany and HROs were not comparable. However, some failures occurred in sectors related to MCompany's business that made the concept of failure free very relevant to MCompany. These failures or near-failures were blockages in highways due to failure of the relevant organisations to grit the

roads prior to snow falls in winter, trains derailments in the rail sector, publicised medical errors in hospitals, or over-costs in local government projects.

Examples, cases and anecdotes played an important role in connecting research findings with practitioner experience. The examples and cases of organisational failure were well-known and publicised catastrophes. They were used to illustrate concepts that otherwise would have been very difficult to explain. The examples helped draw the HRO research closer to the consultants' experience. In the PPP project, cases and examples were used or made available. Although it was agreed by the project team that a set of case studies would be conducted, these were not done. The *lack of field data* to illustrate the mechanisms underpinning successful PPP severely compromised the perceived interest of the research findings. (Chen, 2004; Kogut and Zander, 2003)

The content was perceived relevant if it had a clear *relationship with the company's strategy*. This was the case in PPP, asset management, business transformation and to a lesser extent PFI, which are domains in which MCompany has vested interests. The examples referred to in the paragraph above made PPP and HRO *topical* and *current*, which was another dimension of relevance that emerged from the data. Looking at the issue of relevance across projects, most of them were relevant to some extent to MCompany. However, their outcomes were so different that it is difficult to ascertain whether relevance alone was critical. Although relevance is a desirable property of research, the case of the MC Centre suggests that relevance is a necessary but not sufficient condition to facilitate research utilisation and learning and knowledge realisation. Thus, relevance may explain some outcomes of the projects in conjunction with other constructs such as novelty.

A key enabler is the extent to which research is *perceived interesting*. Only one project, HRO, was consistently perceived as interesting. Informants referred to this project as 'fascinating', 'sexy' and 'exciting', 'intellectually stimulating', 'new' and 'novel'. The project contained key 'hot' topics such as 'zero tolerance to error', 'redundancy in systems and skills', 'decentralisation and migration of decision making in high loading mode', 'incubation of latent failures'. These concepts triggered insightful discussions in search of 'what they mean' and 'what is in them for me and for my organisation'. Some of these concepts were new to people, which attracted their attention and eagerness to know more about them. On the contrary, the PPP project identified as key aspects to manage PPP the following: 'identifying the right services', 'selecting suitable partners', 'defining the contract', 'allocating risks', 'measuring performance', 'committing to shared objectives', 'building trust', 'ensuring communication', 'maintaining a collaborative culture' and 'leading the partnership'. These dimensions were deemed 'obvious' and not new, rendering the project unattractive and the question 'so what?' unanswered. Overall, the way the attribute 'interest' is construed suggests that perceived novelty is also related to perceived interest. Novelty as discussed earlier, and in light of the mean results for this construct across all projects (it has the lowest mean= 2.09), emerges as a very significant construct.

Table 8.5 provides a summary of the cross project comparison of key content enablers and barriers. The criterion to consider an enabler key is the same as before. Critical enablers are those that being present in successful projects are not present in unsuccessful projects. Critical barriers are those that are present in unsuccessful projects but not in successful ones.

Attributes of content	HRO	PPP	AssM	PFI	BussT	Conclusion
Perceived to be relevant	HRO was perceived relevant. Addressed both general and specific issues that the clients have. It was related in some way to the individual's sphere of work. People thought this project was topical, had potential to develop tools, usable and sellable.	Highly relevant to the company given that it is a key area of MCompany's business. The topic was closely related to the background of the project leader and project sponsor. It was less relevant for other individuals.	Relevant to the business Unclear relevance to people due to technical/ strategic divide.	Slightly relevant. MCompany was not a provider of PFI.	Relevant. Large projects MCompany delivers have an element of Business Trans-formation.	Relevance is a necessary but not sufficient condition. On its own cannot be said to be a critical enabler.
Perceived to be interesting	The project was perceived as highly interesting and described as fascinating, sexy and exciting, intellectually stimulating, new and novel. The project contained key topics, offered new perspectives, and a compelling way to analyse an organisation.	'PPP' was considered an overused 'label'. It was not perceived as an interesting topic.	The process was thought to be interesting. Content was not developed enough.	Not interesting. Too big a concept.	NA	The interest of the topic was perceived as fundamental. Novelty stands out as important and together with relevance made HRO highly successful.
Credible and rigorous	Well-grounded in research, conducted using a rigorous method.	Effective research process. Grounded in limited existing research.	NA	NA	NA	Quality evidence on which to base the conclusions is thought to be important.
Clear and focused research question	Well-articulated and precise research question. Clear scope and focus.	Research question too broad,. Unclear scope and focus.	Research question proved difficult to clarify.	Various questions posed but none agreed.	NA	A well-articulated and precise research question focuses the research project.
Not easy to understand	HRO was not readily understood. It needed time to understand its key components and implications. If well explained, it 'attracted' people.	It was a topic relatively easy to understand.	Difficult to agree a common understanding.	NA	NA	The level of difficulty is not significant. It is the way it is explained.
Lack of field data	Lack of cases from the same sector precluded more detailed understanding.	Case studies not conducted diminished the value of the project.	No field data was gathered.	NA	NA	Cases, real live examples and field data seem to be fundamental.

Table 8.5 Summary of the content across projects.

8.4. Cross-project comparison of practices

What follows is a detailed comparison across the five projects highlighting the enabling or hindering practices. The practices that emerged as significant in each of the projects are selected, and their occurrence analysed across projects. The outcomes and perceptions of each project are used to inform whether a practice is important or not.

8.4.1. Key enabling practices

All the case study evidence clearly shows that the *internal and external dissemination* of research findings and ideas significantly contributed to the learning and knowledge processes. The events with clients, workshops, and dissemination initiatives fostered participation, engagement and direct contact, all of which facilitated learning and knowledge processes. This supports existing research in this field (Chua, 2002; Hislop, 2003; Kalling, 2003; Sung and Gibson, 2005; Wagner, 2003).

The empirical evidence across the HRO, PPP and AssM projects indicated that the co-production approach (Tranfield, Denyer et al., 2004b) to management knowledge encourages learning and knowledge process. These ongoing discussions and negotiation of meaning enabled the blending of academic knowledge (primarily explicit) with practitioner experience (primarily tacit) through a process of externalisation and internalisation (Nonaka, 1994), negotiation of meaning (Gherardi and Nicolini, 2000) and contextualisation (Tranfield, Bessant et al., 2003).

The *utilisation of the research* findings in *bids and proposals and in organisational interventions are* examples of symbolic use (Beyer and Trice, 1982). These emerged as a key ingredient of success. This was particularly evident in the HRO project and to a lesser extent in the PPP project. The HRO project evolved from desk research, to engaged discussions within the team, to internal presentations within the company, to presentations in events with industry leaders, and to an implementation of a change programme in H Highways based on the research findings. This implementation was largely the result of the Senior Consultant's (H15) belief in the potential of the HRO ideas, his determination to find a suitable context (client) to implement them, and the input and engagement of the Senior Research Fellow (A7) and the Director of AMRC (A6) in distilling, from research findings, practical tools.

The resulting outcome of the implementation of HRO in the form of paid work reinforced the consultant's original belief in the importance of the idea. This belief in the potential of HRO was strong enough to break the barrier of its 'unproven success' (O'Dell and Grayson, 1998; Szulanski, 1996), demonstrating that the research projects could generate money for MCompany if effort were devoted to adapt and apply them. Unproven success is a phenomenon that suggests that some ideas or practices may not be adopted if there is lack of prior evidence that the 'idea actually works'. The Senior Consultant responsible for the implementation of HRO (H15) believed the idea was interesting. Thus he joined forces with the Cranfield team to make it relevant to a real client with a real life problem. Later on, the HRO findings were adapted and a proposal presented to the client, who accepted it, creating a positive feedback loop.

The case of the MC Centre showed how and when the *mechanisms to disseminate and exploit research are clear*, it is easier to draw individual and material resources that will result in enhanced learning and knowledge. A clear view of what was 'wanted' from a project helped define what was 'required' in order to make that happen. Clear specification of outcomes from research focused the attention and effort of individuals towards a concrete end. The Director of Strategic Consultancy and project leader of HRO wanted to organise several events with clients, and pursued them energetically. He fixed a date for the events and then looked for what was required to get those meetings organised. Such determination and drive was not apparent in the other projects. The Director of Strategic Consultancy was clear about what *he* wanted (or needed) and that clarity created in him a strong sense of purpose. 'Organising events' was the enterprise he was mostly engaged in, and in which he engaged others. This was not the case in the other four projects.

The empirical work also revealed that *follow up and development work* of the initial findings positively contributed to the overall project outcomes. For instance, the initial findings of the HRO project (the characteristics of highly reliable organisations) were followed by research exploring organisational failure. In none of the research projects were the first set of research findings conducive to readily usable ideas. On the contrary, research findings opened up new questions, many of whose answers were perceived to be worth pursuing. This process of opening new questions evidences how knowledge is a continuous process of discovery, something that individuals do, rather than something they possess in their heads (Weick, 2002). However, the follow up and continuous development comes at a price. Sufficient time was needed to allow for understanding, adapting and assimilating findings from research. This time, 'head room' or 'spare capacity' as some interviewees referred to it was not widely available, or individuals in MCompany found it difficult to make it available. This was a key barrier to which we now turn.

8.4.2. Key practice barriers

Across all the projects interviewees referred to the *lack of time to become involved* in the project as major hindrance to the development of learning and knowledge. The reasons mostly adduced were the pressures from the organisational context to generate income and to increase billable time that consultants were evaluated on. An apparent contradiction was created between 'urgent' business generation activities and 'important' activities to realise 'thought leadership' using the research projects as vehicles. The case of the MC Centre and its projects, confirms the need for specific investments and the allocation of resources to enhance learning and knowledge, either by training (Leseure, Bauer et al., 2004), or expenditure in R&D, which increase the organisation's absorptive capacity (Agrawal, 2001; Cohen and Levinthal, 1990) and time to engage in learning and knowledge opportunities (Latham and Latham, 2003).

The *lack of clarity* about the *scope* (the conceptual area or domain of the research project), and the *focus* (or particular issue to be addressed by the research), severely precluded learning and knowledge. Apart from project 1 (HRO), none of the research projects had a clear and widely shared purpose, according to the people involved. Project 2 (PPP) was perceived as having an imprecise intent reflected in a vague research question. Project 3 (Asset Management) struggled during months to find a

viable and significant direction. In project 4 (PFI) three different questions were posed and none of them pursued. Project 5 (BussT) failed to initiate. The Director of Business Transformation did not even organise a meeting together to try to agree a purpose.

The case of the MC Centre also illustrates how the *lack of clarity about the expected outputs* precluded the effective attainment of them. On many occasions, informants referred to the inherent value of discussions around the projects research themes. However, the MC Centre was measured by the volume of outputs in tangible form that were produced (events, reports, papers...). Some individuals declared that the value of the MC Centre was in the insightful discussions that took place. Others thought the MC Centre was worthwhile only if it gave the company opportunities to get more work from clients through the use of ideas, approaches and models derived from the research. The HRO became an exemplar of how insightful discussions around an interesting and relevant theme, with a clear purpose, can engage individuals and eventually ca lead to product development and paid work from clients.

The PPP project also had a certain degree of clarity about the expect outcomes. It was clear that a report had to be produced. However, the target audience of the report was unclear, so was the extension and style of the proposed publication. It was clear that an event with clients was desired. However there were a number of aspects that were unclear: firstly, the format of the event and whether the session should be a classic presentation or an interactive and participative session; secondly, the role of the audience in relation to the event, whether the discourse was 'these are findings that we want to tell you about' or 'we would like to involve you in further exploring the issues raised by the research. Initially a one-day workshop was planned but it changed to an evening event.

Table 8.6 summarises the enabling and hindering practices for learning and knowledge processes across projects. A column is devoted to each project, followed by a brief conclusion. The last column indicates whether the enabler / barrier identified is critical. Critical enablers are those that, being present in successful projects, are not present in unsuccessful projects. Critical barriers are those that are present in unsuccessful projects but not in successful ones.

Practices	HRO	PPP	AssM	PFI	BussT	Conclusion
Internal formal dissemination, e.g. away days, workshops, etc.	Three large internal management development workshops were organised.	Internal workshops were not organised.	No	No	No	The internal dissemination of findings helps involving people.
External dissemination in events organised with clients.	Five events with senior representatives from key clients were organised. Two of these were sector specific (highways and gas industries).	Two key clients were invited to a meeting. One event with industry leaders.	No	No	No	External events were considered fundamental to developing learning and knowledge.
Utilisation of the research findings in bids and proposals.	Presentations in two companies and inclusion of HRO thinking in at least two bids (DEFRA & highways).	PPP ideas were used in the negotiation of a large successful contract.	No research findings produced.	No	No	Being able to use research findings to gain new work reinforces the research.
Implementing the findings in a real intervention.	Implementation of HRO in H Highways 2005-2006. Contract worth more than £130,000.	No evidence of formal or structured implementation.	No research findings produced.	No	No	Producing audit and intervention tools addresses product development.
Follow-up and development of initial research findings.	Initial research on Organisational Reliability was followed by research on Organisational Failure.	No follow up was conducted.	No	No	No	Follow up nurtures initial research findings, expands initial valuable results.
Engaged discussion and a co-production approach.	Occurred in intense focused discussions.	Occurred along the project.	To develop the question. Highly valued.	No	No	Wide agreement of the value of engaged discussions.
Clarity of exploitation mechanisms	Exploitation through events and workshops, written materials and later the development of implementation tools.	Not clearly defined. An event and report were agreed but not the 'type' of the publication.	A report and event were planned.	Not defined.	Not defined.	Helps or hinders focusing efforts towards concrete results.
Interactive aids to present the findings.	Large collages displaying key research findings were used.	A big wall chart was employed displaying key research findings.	Not used.	No	No	The interactive aids helped bring the content of research to life.
Planned or project – management approach.	No pre-planning. Project run following an 'opportunistic' approach.	Planned approach with regular meetings. Accomplishment of actions not monitored.	Yes. Well defined plan.	Only initiated.	No	The way the project is planned does not seem to make a difference.
Lack of time to become engaged in the projects.	Led to times of stagnation in the project, severely jeopardising the outputs. Project leader involvement discontinuous.	The project took longer than expected. Project leader involvement discontinuous.	Lack of time precluded development.	Project leader did not lead.	Project leader did not start project.	Lack of time (regardless the reasons) did have a negative impact on the overall research programme.
Unclear purpose; vague scope and focus of the research.	The objectives of the research were clear as well as the scope.	Broad scope and unclear focus.	Initial lack of clarity.	Not defined.	Not defined.	Jeopardise effective contributions of the team members.

Table 8.6 Summary of enabling and hindering practices across projects

8.5. Cross-project comparison of people

This sub-section aims to identify those aspects related to the 'people' dimension that were critical. Overall, evidence from the case study has shown how engagement and ownership in the projects made a difference to the outcomes achieved in the projects. Details of these are explained below.

8.5.1. Critical enablers and barriers of the people dimension

A consistent finding across the projects is that whatever the outcomes achieved, (successful in the case of the HRO project, partially successful in the case of PPP and, largely unsuccessful in the case of AssM, abandoned in the case of PFI and failed to initiate in the case of BussT) these were dependent on the *engagement in, and the ownership of* the project by a selected number of individuals. This engagement, as discussed in sub-section 8.4.1, is argued to have had in the case of HRO a cognitive, behavioural and social component. A few individuals were deeply engaged: the project leader and Director of Strategic Consultancy (H8), the Researcher Consultant (A4), the Senior Research Fellow (A7), the Director of AMRC (A6) and the author of this thesis. They were engaged with the 'content', the 'practices' and the 'people' of the project to achieve the best possible outcomes out of it.

Individuals became *engaged* with the 'content' when they devoted efforts to synthesise, contextualise, explain and adapt the initial research findings into a series of propositions to be presented to clients in workshops and events. The members of the team, particularly the Director of Strategic Consultancy (H8), the Research Consultant (A4) and the academic team, all worked together to clarify the initial research findings about the mechanisms that HROs use to enhance organisational reliability. The project leader, the Research Consultant and the academic team, all had a genuine interest in understanding and making the most of the research findings on high reliability. The project leader in particularly made an effort to translate research findings into "provocative, stimulating and commercially valuable" propositions (H8, Steering Group Meeting 21/19/2002). Cranfield academics were engaged in ensuring that the propositions and claims made in presentations to clients or published in articles were based on valid interpretations of the research findings. Building an argument that was perceived as 'provocative' and 'stimulating' and at the same time supported by evidence was a difficult process. A long iterative process of negotiation of meaning was needed. However, when individuals engaged in this process of constructing an interesting, relevant, and rigorous argument, the outcomes of the project in terms of new knowledge and learning were significant.

Individuals became *engaged* with the 'practices' of learning and knowledge in writing outputs, correcting presentations, organising meetings and workshops. Meetings were mostly held at MCompany's premises. Equally, MCompany staff organised HRO workshops and meetings in Cranfield, enabling their clients to interact with Cranfield researcher in the School of Management.

Individuals involved in the project became *engaged* with each other in various ways. For instance, Cranfield researchers helped in the organisation and design of workshops and in

presenting some of the topics. In the HRO project, the academic team assisted the MCompany consultants to deliver a presentation to a key client. Overall the engagement effort and commitment from both parties was more evident in HRO that in the other research projects.

A critical enabler that was present in the HRO and PPP projects, but not so much in the other projects, was the *ownership* displayed by the respective project leaders. In both cases, various constraints, such as work load, the merger of MCompany with PCompany, etc., had an impact in the project leader's ability to manage the project. Despite these pressures, the participants recognised that both the ownership and the *support of senior managers* to the projects were critical. The Associate Director – Public Services Research – of the Government Agency, who participated actively in the PPP project, admitted that "ownership, is absolutely vital to any project … someone's got to own it and make it happen" (P22, 10/01/2005). Senior management support was important as it provided the necessary backing for individual's action, and also provided legitimacy to what was being achieved in the projects.

> "At the end of the day people make these things happen, and inevitably there needs to be sufficient people. You can have one of these things that happen to go so far, or around one individual but at the end of the day it has to get the commitment of the leadership of the organisation" (P20, Director of Business Development, 20/12/2004).

In addition to the support and legitimacy provided by the senior managers of the organisation, *individuals' intrinsic incentives* affected their willingness to participate in the activities of the MC Centre. In the interviews, participants referred mostly referred to intrinsic factors such as 'achievement and personal interest', 'intellectual stimulation and new ideas' and 'profile and reputation' as the key motives to their becoming involved in the research projects.

In chapter 2 it was reported how nine people left MCompany in the course of this research, particularly in the period between mid-2003 and mid-2004, including the following: the Managing Director of Management Consultancy (A2), the Non-Executive Director (A3), the Research Consultant (A4) and the leaders of the HRO (H8) and Asset Management projects (AM24). This unexpected turnover of key individuals in a relatively short period had a significant negative impact on the extent to which the MC Centre research programme fully achieved its intended knowledge and learning outcomes.

A particular puzzling finding of this thesis is that HRO, *the most successful project,* was plagued with *conflict and personal tensions*, and the PPP project that was judged as only partially successful, ran smoothly, with its project members enjoying a friendly atmosphere of friendship throughout the project's life span. The HRO project went though periods of severe tensions between the research and the consulting team. In particular, there was a difficult episode when the first HRO event with key clients was set. In a period just before the event, the person responsible for organising the event, who was also a presenter (the Director of Strategic Consultancy), by his own admission, did not have sufficient knowledge of the findings from the HRO research. Under such circumstances, he felt under huge pressure to quickly 'digest' some of the findings to craft a sensible argument. Several meetings were arranged to clarify his misinterpretation of the research. In the course of these discussions fundamental disagreements emerged creating enormous tensions (more details have been provided in chapter 7, section 7.2.3). This episode contradicts existing research (Lane, Salk et

al., 2001) that suggests that agreeable relationships facilitate learning and knowledge. This apparent contradiction is discussed in the next chapter.

The following table provides a summary of the cross project comparison of key 'people' enablers and barriers. The criteria to consider an enabler key are the same as before. Critical enablers are those that being present in successful projects are not present in unsuccessful projects. Critical barriers are those that are present in unsuccessful projects but not in successful ones.

People	HRO	PPP	AssM	PFI	BussT	Conclusion
Engagement in, and ownership of, the project	The project leader 'owned' the project taking it personally. He was engaged in trying to make the project successful.	Project leader 'owned' the project and was determined to take it to completion.	Only partial ownership.	Only timid. initial ownership.	Total lack of ownership.	The successful projects appear to be driven by engaged and determined individuals.
Support from peers, partners, and senior managers	The academic team heavily assisted the development of the project. Senior managers supported and legitimised its rollout.	The team worked well together. Senior sponsorship was available.	Team was formed but not performed.	Team only met twice.	No team was created.	Significant results seem to be achieved if members and senior managers are supportive.
Strong intrinsic motivations	A clearly-displayed and admitted strong motivation of project leader and team.	Strong motivation of project leader and sponsor; more limited from the team.	Partial and discontinued motivation.	No motivation was perceived.	No motivation was perceived.	Intrinsic motivation was argued to be a positive help to the development of projects.
Lack of continuity of people	Slowed down the project when leader was not available.	The project was put on hold when leader was not available.	Leader left and project was abandoned.	The project was started and was abandoned	Did not start.	Learning and knowledge were seen as processes that require continuity of people to achieve their intended outcomes.
Perceived affable relationships.	Affable relationships did not exist, but acceptance of each other. The focus on the task compensated the lack of quality relationships.	Relationships were overall cordial and friendly.	Easy relationships.	Neutral; there were no positive nor negative episodes.	Project leader reported his unwillingness to collaborate.	Affable relationships help the research process, but can be detrimental to learning if they preclude mutual questioning or complacency within the group.
Tensions amongst individuals involved.	Open tensions were experienced in the group.	Subtle frictions existed between specific individuals but were not evident (revealed later in interviews).	No tensions experienced other than frustration with the research question.	No tensions experienced.	Strong resentment of project leader aborted the project.	Bad relationships significantly undermined the success of some of the projects but were also evident in the successful project.

Table 8.7 Summary of the people aspects across projects.

8.6. Summary

This last section of the chapter is devoted to briefly summarise the cross-project analysis of enablers and barriers to learning and knowledge processes in terms of 'practices', 'content' and 'people' described in the previous pages. The analysis has revealed puzzling phenomena that warrant further discussion. This will be the aim of the next chapter, in which the findings and cross-project comparison are revisited and theory used in order to identify aspects that this study may have confirmed, amended, refuted or added.

The following table summarises the comparison across projects of the 'content', 'practices' and 'people' dimensions.

Project	Content	Practices	People	Outcome
HRO	Regarded by participants as a widely relevant, interesting and rigorous project, with clear focus and scope. Empirical data in the form of cases, examples and anecdotes from others sectors informed the project.	A loosely-planned project with numerous events to promote ideas and debate. Three uses of knowledge appear to be evident: instrumental, conceptual and symbolic/strategic. Engaged discussions and various dissemination formats with clear scope & focus and a wide range of outputs.	Personal ownership of the project by MCompany and Cranfield. Engagement fuelled by strong intrinsic motivations of a critical mass of people. Clear organisational and management support. A project where strong tensions were experienced.	A project perceived to be highly successful.
PPP	A relatively relevant, non-interesting, moderately rigorous project with broad scope and unclear focus. Lack of empirical data.	A planned approach with regular meetings that provided the platform for useful discussions. Primarily conceptual use. Limited outputs.	Clear ownership underpinned by personal interest with variable support in a context of cordial relationships.	Project partially successful.
AssM	A relevant, not sufficiently interesting project, with an ill-defined area.	A planned approach with valuable discussions aimed at scoping and focusing the project. No outputs.	Limited ownership with lack of realised support within the team.	Largely unsuccessful.
PFI	Slightly relevant, non-interesting & insufficiently defined.	Practices were reduced to two meetings.	Lack of leadership and continuity that did not generate support.	Was abandoned.
BussT.	Relevant project but scope or focus not defined.	No practices.	A personal conflict that fatally jeopardised the project.	Failed to initiate.

Table 8.8 Summary table of the cross-project comparison

9. DISCUSSION

9.1. Introduction

The purpose of this chapter is to discuss the findings reported in previous chapters. Specifically, this chapter aims to discuss the enablers and barriers to learning and knowledge processes in the case. The literature on organisational learning reviewed in chapters 3 and 4 is employed to facilitate understanding. Given the complexity of the phenomenon studied, other concepts and theories from a variety of fields are used to help explain the case. The chapter is structured according to the conceptual framework employed in this thesis which was derived from the systematic review (chapter 4): 'content', 'practices' and 'people'.

In chapter 3, the Theoretical Background, a view of learning and knowledge that incorporates cognitive, behavioural and social elements was proposed. This view was believed to be better suited to capture the subtle and complex nature of learning and knowledge processes. In this chapter, it is discussed how the empirical data supports the appropriateness of the cognitive - behavioural - social approach to study learning and knowledge. Specific aspects of learning and knowledge processes are discussed in this chapter prior to concluding in chapter 10 with the learning and knowledge processes found in the case.

In relation to the enablers and barriers identified in the systematic review (chapter 4), in this chapter their significance is discussed. In so doing, concepts and theories of management-related disciplines such as sociology and work psychology are used to gain insights as to how the differences in learning and knowledge processes across the research projects occurred.

9.2. Content

From the cross-project comparison, four key attributes of the ideas inherent in the research projects were identified as being critical. These are: 'novelty', 'interest', 'relevance' and 'credibility'. These attributes are discussed in turn in the next section. The issue of clarity in the scope of the research and in the research question also emerged as a significant factor and this is discussed in section 9.3.3.

9.2.1. Novel and interesting ideas

One project, HRO, was perceived by the majority of interviewees to be novel and interesting whilst PPP, AssM and PFI were not considered as such. HRO was perceived to be a novel idea. Table 8.4 in the previous chapter showed how HRO scored the lowest mean (2.09) of all the ideas and how this score had the largest difference in mean score of all constructs. According to all sources of data, no-one in MCompany was

familiar with the concept prior to the project. At the beginning of the project this novelty hindered the acceptance of the HRO idea. In particular, some of the concepts inherent in HRO such as 'redundancy', 'tight coupling', and 'complexity' were perceived as being difficult to understand.

The success of HRO compared to the other projects is, therefore, difficult to explain using existing organisational learning theory. HRO was a project in which content was totally new to MCompany. Existing theories suggest that prior related knowledge is a precondition for learning and a key component of absorptive capacity (Cohen and Levinthal, 1990). A firm's prior knowledge facilitates the absorption of new knowledge, thereby renewing a firm's systematic search, and subsequent incorporation of knowledge and capabilities (Liyanage and Barnard, 2003). Entrepreneurs are also said to discover opportunities that connect with existing related knowledge (Shane, 2000). This thesis presents a case where the contrary actually occurs. HRO was totally new to the company and was the project that contributed most to knowledge and learning processes. Scarborough, Bresnen et al. (2004) found in a study of the implications for organisational learning from project-based learning, that, whilst the availability of prior related knowledge enabled the assimilation of learning in projects, subsequently, such prior knowledge was seen as limiting wider organisational learning. HRO was successful in generating new knowledge despite its novelty and despite being an area where MCompany had no prior related knowledge. A factor that played a role in this was the extensive use of exemplars and anecdotes in communicating the research findings.

During its conception (late 1970s–early 1980s), the research on HRO was conducted in organisations that operated in high hazardous contexts achieving nearly failure-free performance (e.g. aircraft carriers, nuclear power plants, air traffic control, and nuclear submarines). The examples of these organisations provided insightful cases to see how nearly failure-free performance could be achieved in practice. These examples were useful to understand the concepts of HRO, but they were also criticised for being alien to the sectors in which MCompany operated. However, in the initial stages of the MC Centre's research, a number of highly publicised failures occurred in the UK in rail, roads, hospitals, and schools. HRO ideas provided the lenses to understand failures in systems and organisations in both high hazardous and low hazardous contexts, facilitating the connections between novel HRO concepts and familiar instances of failure. So, despite the theme that HRO was novel, some instances of organisational failure were familiar, enabling the discovery of opportunities that made HRO ideas be perceived as interesting and relevant.

'Novelty' stood out as a key construct in the analysis of repertory grid, as well as 'interest' and 'relevance'. In the elicitation process of the repertory grid, informants used interest and relevance interchangeably, although through a detailed examination of the semi-structured interview data it was possible to identify subtle differences between these two concepts. The remaining part of the subsection discusses why HRO was perceived to be interesting and the next subsection addresses the aspect of relevance.

HRO was perceived as interesting and described as fascinating, intellectually stimulating, new, novel, exciting and sexy (see chapter 7, section 7.2.2.1). Silvia (2005) based on four experiments found that the structure of interest consists of appraisals of

novelty (factors related to unfamiliarity and complexity) and appraisals of coping potential (the ability to understand the new, complex thing). These two appraisals were present in interviewee's accounts particularly in that of the HRO project leader. He appraised HRO ideas as 'novel': "novelty is a good word because it is not unique, it is novel" (H8, Director of Strategic Consultancy, 27/08/2003). He also showed appraisals of coping potential "that's [HRO ideas] very interesting and I don't understand it, so let's go and do some more research on it" (H8, Director of Strategic Consultancy, 27/08/2003).

HRO became 'fashionable' within MCompany and concepts such as 'failure-free service delivery', 'zero tolerance to error', 'error cascading' became part of consultants' discourse and language. These concepts were used in presentations and incorporated in bids and proposals for new work. The diffusion and adoption of management ideas offers some useful explanations on the characteristics of fashionable ideas. Abrahamson (1996) argues that what makes ideas fashionable is a convincing rhetoric, that is both rational and appears to be at the forefront of management progress (p.267). According to Abrahamson, an idea is rational if it creates the belief that it allows the user to pursue an important managerial goal. HRO was perceived by members of MCompany as an important managerial goal "whose time had come" (A6, Director of AMRC, 14/03/2006).

Abrahamson (1996) also claims that if there is a clearly identified 'performance gap' that the idea can address, this will contribute to the perceived rationality of the idea. In the context of MCompany and the wider environment of UK public infrastructure, HRO provided an approach to break the 'efficiency' mindset (Tranfield, Smart et al., 2001) that had dominated the management of large infrastructure assets over the last two decades. Recent publicised accidents and severe organisational/system failures in roads, trains, hospitals and education became the 'performance gap' the HRO research sought to address. The HRO ideas were framed in internal and external presentations as a "new way to assess business performance" (H8, Director of Strategic Consultancy. Internal Event, 13/03/2003). It also provided a dimensionalisation of the parameters that if taken into account would likely lead to nearly failure-free mission delivery. The rhetoric in which the HRO was framed, made it an idea highly likely, following Abrahamson, to be adopted and used.

Why HRO was also judged as an interesting idea can be explained by the 'sociology of the interesting' (Davis, 1971). This postulates that an idea is likely to be interesting if it denies some assumptions held by the reader (or audience) but not all. In their recent essay "What makes management research interesting and why does it matter?" Bartunek, Rynes et al. (2006) cite Davis (1971) and argue that the fundament of Davis' reasoning is that research must 'stand out', it must deny certain assumptions of a particular audience.

In the HRO, the assumption that may have been denied is that system failure is inevitable and/or inexplicable. The HRO project comprised a systematic review of the characteristics of highly reliable organisations. This review identified a set of dimensions that explained how some organisations despite operating in highly hazardous contexts and under extreme conditions achieved nearly failure-free performance. It denied the assumption of the inevitability of failure. Subsequent

research on HRO, particularly exploring organisational failure, revealed that certain preconditions or latent failures could remain unnoticed, accumulating up to a point where a catalyst would trigger a disaster. The research on organisational failure showed how in complex and highly-coupled systems, humans, technology and processes could interact in a way as to increase the likelihood of a disaster. This may have denied a second assumption that failure was inexplicable. The research conducted in the HRO project provided new perspectives with which to assess business performance, it helped to understand why some organisations fail, and most importantly the HRO research identified design parameters and an architecture or principles to configure a highly reliable organisation. On the contrary, the PPP project confirmed what consultants already knew as reported in chapter 7 and summarised in the comment that the outcome of the PPP project was "an awful lot of fairly obvious sort of stuff" (P22, Associate Director – Public Services Research – Government Agency, 10/01/2005).

The phenomenon 'interest' is relevant to learning and knowledge processes as it is in other fields. The perception of interest has recently been associated with motivation and task performance (Sansone and Thoman, 2005). Classic expectancy theory (Vroom, 1995) suggests motivation varies depending on how much individuals value goals and expect to attain them. Sansone and Thoman (2005) argue that regulating the interest experience can be just as powerful, if not more so, than enhancing the value or expectancy of attaining the outcome. As reported in Table 6.2. respondents mentioned 'achievement and personal interest' (14 mentions) and 'intellectual stimulation' (14 mentions) as the motivations of why they became involved in the research projects. This suggests that in the context of the MC Centre 'interest' played a notable role in enhancing motivation, increasing the performance of tasks related to the project (e.g. dissemination effort) and thus, learning and knowledge processes.

Ainley, Hidi et al. (2002) explored the mediating processes and how individual and situational interest factors contributed to topic interest and text learning. Their results on students indicated that topic interest was related to positive affective responses, which in turn increased persistence on the task, persistence to learning and subsequently learning outcomes. These findings seem to indicate that the factors that trigger 'interest' are more general and intrinsic than those that trigger the perception of 'relevance' which seem to be more context-specific both in terms of the organisation the individual works for and in terms of his/her professional background. This suggests that the characteristics of 'interesting' research may be more general, appealing to individuals as social human beings, rather than to professionals in a given area. Interesting research appears to be connected to inherent motives and emotions. This raises the question of the extent to which it is possible to conduct research that is both relevant and interesting. Relevant research appears to be local and specific and interesting research seems to address issues of broader scope.

The reasons why HRO was eagerly adopted in MCompany can be located not only in the characteristics and rhetoric of the idea alone, but also in the organisation. Sturdy (2004) identifies and assesses perspectives on the adoption of management ideas, some of which could be observed in the case of MCompany. The first perspective, the *rational* view has been described above when arguing that business ideas are rational if they create the belief that it allows the user to pursue an important managerial goal (Abrahamson, 1996). The second perspective, the *psychodynamic,* refers to underlying

anxieties which result in a need of order, identity and/or control. In the case of the project leader of HRO there was a declared motivation to engage in strategic debates and to disseminate them across the organisation. The HRO project leader recognised, "I personally like the intellectual debate and then the presentation of that material, so I love presenting, I love standing on stage, I love answering questions and raising challenges" (H8, Director of Strategic Consultancy, 27/08/2003). This motivation occurred in conjunction with potential anxiety stemming from the strong pressure on the project leader and director of Strategic Consultancy to generate business for MCompany.

In adopting management ideas, Davenport, Prusak et al. (2003) refer to 'idea practitioners', as the individuals that turn the ideas into action (p.21) driven by intellectual curiosity and willingness to address complex organisational issues. The director of Strategic Consultancy became 'partially' an idea practitioner since he was the one who adopted HRO initially. However, the 'real implementation' of the idea in a client came from a Senior Consultant from Government Services (H15) who had no previous relationship with the Director of Strategic Consultancy and had not been involved in the research. Once the HRO ideas were in the MCompany domain they demonstrated to have a powerful 'economic reproductive capacity'. This is, HRO ideas were perceived to be valuable in themselves, without the need of specific individuals to convince or influence others of the potential and benefits of the idea, an aspect known as 'interpersonal reproductive capacity' (Williams, 2004).

9.2.2. Relevant ideas

The subsection above, has discussed why HRO was the only project within the MC Centre research programme that was perceived to be novel and interesting. This section addresses the conceptualisation of 'relevance' and based on that conceptualisation, discusses the reasons why some projects were perceived more relevant than others. Looking at the values for the construct 'relevance/interest' in Tables 8.2 and 8.4 in the previous chapter, HRO, AssM and BussT stand out as the most relevant/interesting[1] ideas.

HRO was perceived to be relevant as it informed MCompany's design and intervention activities, an aspect that facilitates the utilisation of research (Mohrman, Gibson et al., 2001). Understanding failure in high-hazard contexts (e.g. nuclear aircraft carriers) facilitated subsequent understanding of failures in low hazard contexts (e.g. roads and rail). These contexts were relevant and close-to-business examples. However, in order to make this applicable to low hazard contexts, mechanisms that have been derived in high hazard contexts, processes of contextualisation (Tranfield, Bessant et al., 2003), translation (Carlile, 2004) and negotiation of meaning (Gherardi and Nicolini, 2000) were required. When these processes were allowed to emerge, the perceived relevance of the HRO increased.

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[1] As discussed in the previous chapter, informants used the constructs 'interesting' and 'relevant' interchangeably. The differences between the two were explored in the semi-structured interviews.

Business transformation was perceived as a relevant idea, possibly because a significant proportion of the services that MCompany delivers involve some degree of transformation of the client organisation. Business Transformation was seen as a cross-functional theme within MCompany. The case of asset management is similar in the sense that a growing proportion of MCompany's business is offered to clients who own large infrastructure assets. However, the case study was inconclusive regarding the relevance to these two projects: AssM was not completed and BussT was not initiated. We can, however, comment on some of the aspects that appeared to contribute to the perception of the relevance of HRO.

The results of the discussion above seem to indicate that relevance is a *necessary but not sufficient condition* to facilitate knowledge and learning processes. A commercial organisation like MCompany would not have engaged in research if it was not (at least initially) perceived as relevant. From the analysis of the interview data, relevant research is local, specific and highly context dependent. In chapter 7 relevant research was described as 'linked to client's issues', 'linked to business strategy' 'connected to personal background', 'topical' 'has potential – sellable'. These constructs suggest that research that MCompany would find 'relevant' is sector- and time-specific, addresses specific problems that are faced, and is generated close to the context of potential application (Tranfield and Starkey, 1998).

What we have understood from the HRO project is that the topic helped to address "local" problems (how to help avoid derailments, and blockages in British rail and roads) but it was also of general significance (how high reliability organisations manage to trap, avoid and mitigate against failure). Ford, Duncan et al. (2003) identified high reliability organisations as one of four important contributions of "research that matters to managers". In their article published in the Academy of Management Executive, they highlight how HRO research "aids in understanding the increasingly important class of organisations that operate under trying conditions but manage to have fewer than the expected number of accidents… Irretrievable systems failures accelerated the concern for and urgency of 'thinking about the unthinkable', 'managing the unexpected' and ultimately led to the better appreciation of the need for crisis management" (p.49).

9.2.3. Credible and rigorous research

The last key enabler of the projects as reported by the participants is the perception they had that the research was being conducted rigorously. The assessment of the evidence-informed approach to management knowledge (Tranfield, Denyer et al., 2003) was unanimously regarded as a rigorous approach. The perceived reliability of the research process enhanced the credibility of the findings. The subsection about the practices (9.3) discusses the co-production process in more detail.

Overall, the findings discussed above provide support for the claim that knowledge that is perceived valuable enhances the recipient's attempts to use it (Gupta and Govindarajan, 2000; Kalling, 2003; Matsuo and Easterby-Smith, 2003). The concept "valuable knowledge" is rather general, and whilst this thesis has found 'interest', 'relevance' and 'rigor' as some of its attributes, other authors specify knowledge value in terms of relative advantage (Rogers, 1995), desirability (Pak and Park, 2004), and criticality of the problems that it aims to solve (Soo, Devinney et al., 2002). What this

study suggests is that the value does not reside only in the knowledge itself but in the processes of co-creating the knowledge. This is discussed in the next section (9.3.1).

9.3. Practices

The cross-project analysis suggested that participants valued discussions relating to the research findings and a collaborative approach to the definition and management of the research agendas. Equally, the events, workshops and other dissemination activities emerged as key enabling practices. The use of research findings in a number of business-related activities such as bids, proposals, and consultancy interventions, all strengthen knowledge and were highly regarded. Some of the practices of the different research projects could be grouped into sets of routines, and these into processes. The knowledge processes identified in the systematic review are discussed in light of the empirical findings, aiming to identify those processes that are relevant to the context of this study, which may help explain the differences across the research projects.

9.3.1. The co-production approach to management knowledge

Participants in the projects deemed the research process as important, since it added *credibility and legitimacy* to the findings. This research supports the contention that the quality of academic research is an enabler of learning and knowledge processes (Corwin and Louis, 1982; NCDDR, 1996). This finding adds to Beyer and Trice's study (1982) that found inconclusive evidence about the role that quality of research plays. This finding also indicates that not just the perceived quality of the research itself, but also the process by which research is conducted, in conjunction with the perceived interest and relevance of research, facilitates its adoption and use in the context of academic-management consulting collaboration.

Over the last five years, the evidence-based approach to management knowledge has been generating increasing interest and gaining growing acceptance (Rousseau, 2006). In the case of the HRO project it proved to be instrumental in transforming the ways consultants think about managerial issues, such as the balance between efficiency and reliability of service delivery. As Pfeffer and Sutton (2006) suggest, "if taken seriously, evidence-based management can change how every manager thinks and acts. It is, first and foremost, a way of seeing the world and thinking about the craft of management" (p.74).

9.3.2. Utilising research findings

As described in the previous sub-section, research findings were used in a variety of ways. Internal workshops were organised with MCompany staff to disseminate relevant findings from the research projects. These initiatives facilitated the conceptual use of knowledge (Beyer and Trice, 1982) through the promotion of management development. Equally, external events with senior leaders were organised to promote the strategic use of research such as using the research findings in bids and proposals with the aim of positioning MCompany as a 'thought leading' consultancy and service provider. This was recognised as a way to develop the company's brand.

Both HRO and PPP had (as reported by their respective project leaders) the clear objective of disseminating the findings of the research to a selected audience of senior representatives from key clients. This was achieved through presentations and was primarily aimed at engaging these senior practitioners in a strategic and intellectual debate. It could be argued that the primary driving force of this use was the desire for MCompany to rid itself of its engineering heritage and re-brand itself as a strategic management consultancy group. In order to create the strategic discussions (to attract interest and potentially new work) the HRO project leader disseminated the findings in ten internal and external events. The PPP produced only one major client event but this event was attended by Senior Directors of many of MCCompany's key clients.

Beyer and Trice (1982) argue that utilisation of research entails people doing something with research results. Drawing on Parson's (1951) theory of action (see also Parsons, 1968) these authors identify four components of individual behaviour associated with utilisation processes: *cognitions, feelings, choices and actions*. Beyer and Trice argue that cognitions define which elements of any given situation people see as relevant. Cognitions are related to information processing mechanisms. Feelings express the values that people place on alternatives, and are expressed in affective bonding, which is influenced by participation and motives. Choices integrate cognitions and feelings by expressing a selection between alternatives and is evidenced in the way decision-makers decide how to use research. Actions are the behaviours people engage in to implement conscious or unconscious choices by using research in instrumental, conceptual and symbolic ways. Relevant patterns in the case study data appear to correspond with and to illustrate these four key elements of knowledge utilisation and these are discussed below.

The first and third component of utilisation behaviours are *'cognitions'* and *'choices'* which are related to how individuals process information and decide about using research. In cognitions and choices, Beyer and Trice (1982) identify the following relevant aspects: establishing the links and linking roles between researchers and practitioners, the timings of research, communicability, internal diffusion, quality, relevance, related experience and manipulability. The links between MCompany and Cranfield, according to the interview data, were facilitated by the credibility of the school and the genuine interest of MCompany's CEO and the Non-Executive Director to engage in collaborative research, confirming existing literature (Argote, McEvily et al., 2003; Watts Sussman and Schneier Siegal, 2003). The linking roles of boundary spanning individuals facilitated research utilisation in the case of the HRO project leader, and precluded more utilisation in the case of the Research Consultant in the PPP project. This confirms existing research about the need for "champions" within the business who appreciate research to facilitate its application and use (Ciborra and Andreu, 2001; Latham and Latham, 2003; Rich, 1991; Tushman, 1977). The empirical findings of this thesis suggest that processes of adaptation, contextualisation and refinement are needed, for the findings to be internally disseminated (Argote and Ingram, 2000; Leseure, Bauer et al., 2004; Tranfield, Bessant et al., 2003) and that relevance of the research further facilitates knowledge development and learning. In relation to the quality of research, it has already been discussed in section 9.2.3 that both the research itself, and the process of conducting research facilitated its adoption and use.

The second component of utilisation behaviours identified by Beyer and Trice (1982) is *feelings,* expressed in affective bonding, and influenced by participation, motives to support or resist research and cultural differences. Participation in the research process by contributing to the specification of its purpose and the interpretation of its findings, was found a key enabler and a distinctive feature of the co-production approach described above. Existing research, apart from Beyer and Trice's findings, generally supports the idea that participation, engagement and direct contact amongst the members, fosters research utilisation (Chua, 2002; Hislop, 2003; Kalling, 2003; Sung and Gibson, 2005; Wagner, 2003). In relation to the effect of individuals' motives to support research and its direction, these are discussed in section 9.3.3 and reported in detail in the people section of chapter 6. Overall, the interview data indicated that intrinsic motivations explained why individuals became involved in the different research projects. The impact of cultural differences in knowledge and learning is still a debated question. Beyer and Trice (1982) reported that cultural differences impede the utilisation of research, limiting its effect in knowledge and learning and this claim is also found in the literature (Kostova, 1999; O'Dell and Grayson, 1998). The perception of cultural differences between Cranfield and MCompany was reported to be detrimental for learning by some interviewees. However, other participants argued that the differences in approaches to creating knowledge between the management school and the consulting firm was beneficial. This confirm Inkpen and Tsang's (2005) claim that attempts to eliminate differences can block second-order learning processes, suggesting that cultural diversity should be beneficial to knowledge and learning.

The last component of Beyer and Trice's (1982) framework for research utilisation, *actions,* is divided into adoption and institutionalisation. The definitions and indicators of these actions have varied and Beyer and Trice propose to distinguish between conceptual, instrumental, and symbolic use (see chapter 4, section 4.5.1.3).

9.3.3. Clarity of purpose

The case study has revealed that many individuals were unclear about what the aims of the projects were. In the PPP and AssM projects the perceived lack of direction was reported to be a significant issue. Across several interviews, from which quotes have been extracted and presented in chapter 7, participants in the projects recognised a perceived lack of clarity about the precise goal of the projects.

The issue of defining purpose in research-practice collaboration is an issue that Mohrman (2001) identifies as substantive, and one that creates a "gulf" (p.61) between academics and practitioners. The learning and knowledge literature does not offer detailed explanation of the phenomenon of defining purpose. Motivation theories drawn from research in organisational psychology may offer an avenue to explain why the lack of clarity about the purpose and aims jeopardised learning and knowledge.

Goal setting theory (Locke and Latham, 1978; see also Locke and Latham, 2002) helps understand the potential effects of this lack of clarity. Goal setting premises postulate that goals which are both *specific* and *difficult* lead to better task performance than goals that are easy or vague. Goal-setting has been considered the most important theory among 73 Organisational Behaviour theories (Miner, 2003), and more than three decades of research has shown that goal setting theory is effective for any task where

people have control over their performance (Locke, 2004 p.124). The lack of specificity of the goals to be attained in PPP, AssM and PFI may explain why their 'performance' in terms of learning outcomes was poorer than HRO. The question that emerges is: Why were the PPP, AssM and PFI teams not able to clarify the specific purpose for their projects?

From the empirical data no immediate answer emerged to this question. It is argued that failure to define a clear and specific purpose could be explained by individuals not wanting, not knowing how to or not being able to define it. The plausibility of these potential causes is now explored.

It is unlikely that people *did not want* to define the objectives of the projects precisely. The interview data revealed a number of motivations to become involved in the project, all of which have been previously studied. Judge, Bono et al. (2005) identify at least four different reasons why individuals may pursue a goal. 'External' reasons, like to meet others' wishes or to attain rewards. 'Introjected' reasons, to pursue a goal to avoid feelings of shame, guilt or anxiety. 'Identified motives', which are intrinsically important goals to achieve. 'Intrinsic' causes, such as pursuing a goal for fun and enjoyment. As reported in chapter 6, interviewees provided examples of motivations related to at least three of these aspects. They referred to 'external' reasons such as financial rewards, to work with industry and to generate business and funding. 'Identified' reasons were the achievement of valuable outcomes, profile and reputation, career development, intellectual stimulation, and creating thought leadership among others. Lastly, 'intrinsic' motives were also mentioned such as enjoyment and team work, passion for presenting new ideas, furthering knowledge, etc. Based on these motives it does not seem plausible to think that purpose was not defined on the basis of unwillingness.

What seems plausible from the observation of meetings and of the dynamics of the relationship between Cranfield academics and MCompany's staff is that the participants in the projects *did not know* how to precisely define a clear purpose for the projects. An explanation is that none of the consultants and executives involved except the Non-Executive Director (A3) had research qualifications or experience in conducting research. This made it difficult for them to engage in an unfamiliar process like conducting research. The lack of requisite variety (Cohen and Levinthal, 1990) may have precluded the engagement in a deeply reflective exercise (Schön, 1987) to identify what it is that 'we do not know' but 'want to know'. The academic team could have filled that gap, specifying the aims and objectives of the research projects but refrained to do so, in the spirit of the co-production approach to management knowledge (Tranfield, Denyer et al., 2004b).

The third potential reason is that people *were not able* to find a solution for the lack of clarity of purpose. In chapter 6 (section 2) the difficulty of specifying a research agenda for the MC Centre was reported. In particular, the episode of the Steering Group meeting on the 21/20/2002 evidenced how the group struggled to define an area of interest and a research question. The director of the AMRC (A6) suggested focussing on classes of problems seeking to identify classes of interventions. However, the nature of the problems MCompany aimed to address were in question, a typical ambiguous situation in organisations (McCaskey, 1982) that often triggers sensemaking (Weick,

1995a). In defining the purpose of the projects, the Steering Group agreed that the questions the projects should address had to be of interest for clients and related to problems that they currently face. Aiming to focus the research agenda around clients' problems could potentially clarify the direction of the projects. However, no one defined clients' problems in a compelling way. It was then suggested by members of the Steering Group to involve clients in discussions early on to help define the scope and focus of projects. Clients never participated in discussions to define the research questions on any of the projects. Why were clients never involved in the discussions around the purpose of the research projects?

The question of whether to invite clients early on the research process or later when findings had been produced, triggered heated debate and encountered differing positions within MCompany. Some people thought that engaging clients early on would strengthen their relationships with them by embarking on a genuine journey of mutual learning from research early on. Other consultants and executives argued that inviting clients early on in the research process may expose MCompany's consultants to questions they did not know the answers to, a situation perceived as potentially embarrassing. The MCompany staff that were against inviting clients may have thought that these external clients could introduce uncertainty and anxiety within the research team. The PPP and AssM project teams consciously or unconsciously structured themselves in such a way as to create a feeling of certainty, by avoiding the environmental uncertainty to banish anxieties, generating a 'totalitarian state-of-mind' (Lawrence, 2000). This situation was influenced by the most senior executives who were against the idea of involving clients early in the process. This instance may have precluded the necessary opening and exploration that is required to define 'what you want to know that you do not know'. The idea of bringing clients to MCompany to help them learn, when the aim of a consulting company is the opposite (help clients learn) may have created fear amongst some senior consultants. As Marrintong and Rowe (2004 p.460) claim, "learning in a social context is dangerous and creates fear, fear of engaging with it and fear of those who may wish to engage with it". Overall a clear purpose could not be clearly defined because 'defensive routines' (Argyris, 1985) took over, limiting MCompany from exploring every possibility to solve a critical issue: the definition of a clear purpose for all the projects and to some extent the MC Centre.

Weick's claimed that "a requirement of a learning programme is that it provides a direction" (Weick, 2002 p.s9). Providing direction and purpose was a critical element missing in the scope and focus of the PPP, the AssM and the PFI projects. PPP was perceived by participants to be poorly defined from the beginning. The initial question was 'is PPP a good or a bad thing?' which was alleged to be unsatisfactory and inadequate. It took several meetings and lengthy, but respectful, discussions to find an alternative question. In the end the question "what makes a PPP succeed or fail?" became the research question which was still too vague and general. However, given the time that had been spent on discussing the old research question and the perceived need to make progress it became the research question that provided 'direction' for the project. In the AssM when a potentially viable purpose was identified, the project leader left, leaving the project suspended. In the case of PFI the initial lack of clarity was not even addressed.

In the previous two sub-sections, the approach to conduct research and its associated practices, as well as different research uses, have been discussed. The next sub-section discusses key aspects related to the people dimension of learning and knowledge.

9.4. People

From the analysis of the broad context of the MC Centre (chapter 6), and the cross-project comparison (chapter 8), three key people mechanisms emerged as critical in facilitating (or hindering) learning and knowledge processes in the MCompany-Cranfield collaboration. The first was the commitment, ownership and support that marked a difference in what was achieved in the different projects. The second and third mechanisms of the 'people' dimension were the conflict in the HRO project and the affable relationships in the PPP projects and how they had an effect on learning and knowledge outcomes that is counterintuitive.

9.4.1. Individuals' involvement and support

The involvement of individuals in the activities of the MC Centre emerges as a key factor in fostering or hindering learning and knowledge processes. Weick argues that a subtle but important feature of learning and sensemaking is that,

> "it is surprisingly indifferent to content. In a way, any old prescription, any old change programme, any old mantra or guru or text will do, as long as that programme (1) *animates people* and gets them moving and generating experiments that uncover opportunities; (2) *provides a direction*; (3) *encourages updating* through improved situational awareness and closer attention to what is actually happening" (Weick, 2002 p.s9) (Emphasis in the original).

A key mechanism in the quote above is '*animating people and getting them moving*'. The HRO project was led by an energetic consultant, who had recently joined MCompany from a well-known global consulting firm, to become the Director of Strategic Consultancy. However, the research highlights the general lack involvement of MCompany staff and support from the senior management of the company. First, a more grounded conceptualisation of the 'involvement' is offered and then 'espoused theories' and 'theories in use' are employed to help explain the varying degrees of commitment.

Although interviewees referred to the word 'involvement' as the extent to which consultants participated and contributed to the research projects, in the literature, the notion of 'involvement' has been discussed using the concept of organisational commitment. Many definitions of organisational commitment exist in the management literature, though one that stands out is Meyer and Allen's (1991) model of commitment that distinguishes between affective, continuance and normative commitment.

Affective commitment is defined as emotional attachment to the organisation. Normally, a person displays affective commitment when s/he is strongly identified with the goals of the organisation and wishes to remain part of the organisation. Continuance commitment occurs when the person is committed to the organisation because he/she perceives high costs (economic, social, etc.) in leaving the organisation. Finally, in normative commitment, the individual commits to and remains with an organisation

because of feelings of moral obligations, such as giving back prior investments in training, etc. Meyer and Allen (1991) suggest that these components of commitment are not mutually exclusive and that the level of commitment is believed to affect workplace behaviours such as job performance, absenteeism, and turnover.

The issue of commitment is significant in this study because during 2004 ten people involved in the MC Centre left the MCompany, eight of whom belonged to the Management Consultancy unit. It is beyond the aim of this thesis to explore the level of employee commitment and how it could have potentially impacted the research projects. The number of leavers, however, questions the degree to which these individuals were committed to MCompany and as a result, to the MC Centre.

The second key emerging issue is the level of support from MCompany's management board. The MC Centre and its research programme enjoyed the full support of the senior management of the MCompany, particularly its CEO who was a founding member. A member of the management board was its co-director and three other members of the board sat as project sponsors. Given this level of declared support, it is puzzling to find that in every project people reported to have had 'lack of time' available to devote to the project. The top management of the company continually expressed their support to the MC Centre, its activities and the individuals involved in it. But at the same time, senior managers exerted pressure on the individuals managing the projects (the project leaders) to deliver commercial results (turnover, billable time, and winning contracts) on their respective areas of business. An explanation of this apparent discrepancy is offered by Argyris and Schon's (1974) distinction between 'theories in use' and 'espoused theories'.

'Theories in use' are implicit in what people do, they govern actual behaviour and tend to be tacit structures; contain assumptions about the self, others and the environment. The words people use to convey what they do or what they would like others to think they do is called 'espoused theory'. An espoused theory: 'the MC Centre is worth the investment of time and effort' seemly clashed with a theory in use to: 'focus on turnover and profit'. A reasonable discrepancy between the two theories is expected in individuals, though according to Argyris (1980) effectiveness results from developing congruence between 'theory-in-use' and 'espoused theory'.

Various issues perceived and reported by different individuals evidenced a conflict between espoused theories and theories in use. For instance, a 5-year research programme had been planned, but there were pressures to deliver tangible outcomes from the MC Centre in the short term. Another example was the belief that the combination of academic knowledge and practical experience was very powerful. However, MCompany found difficult to legitimise spending the necessary time for research to be completed. MCompany wanted interesting, relevant and rigorous ideas that they could take to their clients. But the process of crafting an interesting idea proved to be an artful, specialised skill that required the parsimonious negotiation and contextualisation of meaning to distil messages that linked achievable promises to often fuzzy problems.

The clarity of purpose discussed in the previous subsection was also an instance of espoused theories-theories in use conflict in the PPP project. The project leader claimed

"I'm personally not interested in doing lots of research, I can see the value out of it and getting targeted research, so I would encourage that" (P20, Business Transformation Director, 20/12/2004). Despite valuing 'targeted research', the research question was too generic and the project leader herself resisted changing it once the project had started.

The conflict between focusing on the long-term potential benefits of the MC Centre's research agenda and the short-term need of commercial gains resembles the debate between exploration and exploitation (March, 1991a). Exploration refers to learning and innovation and new knowledge, whereas exploitation refers to the use of past knowledge and existing capabilities. Recent debate has posed the question of how organisations should achieve the balance between exploration and exploitation (Gupta, Smith et al., 2006 p.693). March (1991a) argued that successful adaptation requires both exploration and adaptation. In response to the challenge of achieving both, Benner and Tushman (2003) argue for 'ambidexterity' which is the synchronous pursuit of exploration and adaptation using loosely coupled and differentiated units. Burgelman (2002) on the contrary proposes 'punctuated equilibrium' alternating periods of exploration and exploitation.

The case of the MCompany, during the period after its floatation in June 2002, and particularly after the merger in August 2004, illustrates the hurdles of encompassing the creation of 'thought leadership' via the research projects (exploration) and focusing of delivering service contracts using its existing capabilities (exploitation). Gupta, Smith et al. (2006) argue that when the analysis of the exploration–exploitation dynamic involves action in multiple and loosely-connected domains and exploration and exploitation are viewed as complementary not antithetical, then 'ambidexterity' can be an appropriate mechanism for learning and adaptation. The extent to which each project was a loosely connected domain is questionable. The project leaders had a role in the business, and were also responsible for a budget and for commercial targets. In the case of PPP the project leader was even charged with the task of managing the merger of MCompany with PCompany in the second half of 2003. Arguably, the projects were configured tightly coupled to the business, perhaps to facilitate embedding the learning from the research into the business practices. Furthermore, the extent to which exploration and exploitation were complementary is not clear. Both competed for a resource time that was reported by all interviewees to be scarce. If the analysis is focused on the broader domain of the projects, e.g. Management Consultancy, and exploration and exploitation are seen as an either/or, then Gupta, Smith et al. ((2006) suggests a 'punctuated equilibrium' which was not the learning approach taken by MCompany at that time. At present (September 2006) the collaboration between MCompany and Cranfield is articulated on a project-by-project basis. This reflects the 'punctuated equilibrium' model where MCompany can engage in exploration with Cranfield alternating with periods of exploitation of its business.

9.4.2. Inter-personal conflict

One of the counter-intuitive findings of this thesis is that the most successful project was the one where a high level of inter-personal conflict was experienced. The episodes of tension and personal friction to agree and draw accurate conclusions from research can be seen as the result of pluralistic political processes, where matters are being

contested, renegotiated and redefined on a regular basis (Dyck and Starke, 1999; Fortado, 2001). The tension was alleviated, avoiding the potential rupture of the relationships within the research team, by what Fortado (2001) calls the 'metamorphosis of the conflicts', whereby conflicts twist and change form over time, aided by 'compensatory mechanisms'. The compensatory mechanism in the HRO project was the mutual interest of Cranfield and MCompany in the subject. In addition, the perception of relevance and interest and the fact that a significant effort had been already devoted to understand high reliability minimised the impact of the initial conflict on the knowledge and learning of the project.

This instance of inter-personal conflict in a successful learning project partially refutes existing research. Arduous relationships have been reported as a barrier for learning in the literature (Szulanski, 1996). This case have shown that even when experiencing difficult relations, significant learning may occur, if the content is perceived as sufficiently interesting and relevant to minimise the hurdles of arduous relationships. The contrary has also been reported, and some studies (Gopalakrishnan and Santoro, 2004) found that easy relationships that favour the building of trust facilitate learning and knowledge processes (Lane, Salk et al., 2001; Szulanski, 2000; Twomey, Twomey et al., 2000).

Ford, Duncan et al. (2003) claim that management research that matters to managers requires "mutually beneficial partnerships involving managers and researchers, as well as the support from their organisations". The issue of support is discussed in section 9.4.3.

Interestingly, in the public-private partnership (PPP) project, the scope was unclear and the research questions vague "is PPP a good or a bad thing?" and subsequently "what makes PPP succeed or fail?" (see section 7.3). The Senior Research Fellow repeatedly expressed his concerns about the adequacy of the question stating that it was too broad. Instead he suggested choosing an aspect that the emerging findings pointed at critical in partnerships such as 'building trust' or 'knowledge sharing' to enhance the relevance of the research. His suggestions were never taken into account and the project progressed to end up being a partially successful initiative (see chapter 8). The people dynamics that led to work on a broad, potentially-irrelevant project are discussed in section 9.4.1.

The conflict that occurred within the HRO project team was caused by a marked scepticism about the initial research findings. However, people who were initially highly critical, became engaged in the HRO research soon afterwards making significant contributions to the project. Weick (2002) provides some additional insights as to why this conflict may have been conductive to learning and knowledge. He argues that learning involves initial disbelief. We believe when we comprehend. Comprehension implies immediate belief and disbelief comes later (p. 12). At the initial project meetings, the HRO project leader consistently challenged all the findings from the MC Centre's research. An aspect that triggered special contention was the structuring and decision-making processes in HROs during situations of near-emergencies. The research suggested that in times of high loading of emergencies the structure of the system tended to de-centralise, diverting responsibility to the level where action can be taken, putting into question the benefits of classic hierarchical structures. However, research suggested that de-centralisation was only appropriate in

loosely coupled systems, (i.e. in contexts where an error in a part of the system would not be transferred to another). When this finding was shared with MCompany consultants, not only was it disbelieved but criticised. A similar process occurred with a number of other findings, which in fact created a dynamic of healthy discussion, underpinned by a process of continuous contextualization, testing arguments, looking for examples to prove or disprove. This processes evidences individuals' engagement on the content of the project, which eventually strengthen it.

9.4.3. Easy relationships

With regards to personal relationships, the contrary situation occurred in the PPP project. The dynamics of the personal relationships were cordial. The meetings were described by a participant as friendly meetings and facilitated by a competent project leader who demonstrated ownership by keeping the schedule of meetings, agendas and actions. The mutual unquestioning within the group and Cranfield's limited legitimacy to refocus the project (it was not its area of expertise), rendered the PPP project irrelevant. The concepts of 'diffusion of responsibility' and 'model I vs. model II learning' are used to help explain this apparent contradiction.

The dynamics of the PPP project conformed to what Argyris, Putman et al (1985) called Model I .

> The primary behavioral strategies in Model I are to control the relevant environment and tasks unilaterally and to protect oneself and others unilaterally. Thus, the underlying behavioural strategy is unilateral control over others. Characteristic ways of implementing this strategy include making unillustrated attributions and evaluations, advocating courses of action in ways that discourage inquiry, treating one's own views as obviously correct, making covert attributions, evaluations, and face-saving moves such as leaving potentially embarrassing facts unstated (p. 89).

During the PPP project, potentially embarrassing facts remained unstated such as the lack of delivery of a key individual, saving his face and his superior's but causing an enormous damage to the quality of the output. The project plan and its pre-defined course of action facilitated a 'sense of progress' when in fact it was covertly discouraging further enquiry and mutual questioning, in particular about the relevance of the work being conducted. The PPP project team unconsciously fell into the trap of thinking that its views (given PPP was a MCompany area of expertise) were obviously correct. The often unquestioned signing off of interim research findings by consultants reinforced a fictitious sense of 'moving forward'.

Model II, the contrast of model I can be briefly described as follows:

> The governing variables of Model II include (1) valid information, (2) free and informed choice, and (3) internal commitment. The behavioral strategies of Model II involve sharing control with those who have competence and who participate in designing or implementing the action. […] Attributions and evaluations are illustrated with relatively directly observable data, and the surfacing of conflicting views is encouraged in order to facilitate public testing of them. The consequences of Model II action strategies should include minimally defensive interpersonal and group relationships, high freedom of choice, and high risk taking. The likelihood of double-loop learning is enhanced, and effectiveness should increase over time (Argyris, Putnam, et al. 1985 pp. 98,102).

Contrary to what happened in PPP, some of the events that occurred within the HRO project, fit well into Model II. Most claims and attributions made about highly reliable organisations were supported by evidence. This evidence was continuously called upon by the Cranfield team to construct arguments and propositions. In addition, the consultants involved drew on their practical experience which was often subject to scrutiny and public testing. Conflicting views were not encouraged, they were just there all the time. Some risks were taken in the course of the project. At a conceptual level, to argue that some of the characteristics of highly reliable organisations could be extrapolated to low-risk companies. At a practical level, to fix the date of a client event to talk about HROs without knowing the details of what HROs were all about and exactly what makes them achieve failure-free performance.

The case study evidence suggests that affable relationships may be counterproductive if it allows complacency to emerge. Szulanski, Cappetta et al. (2004) claim that the trust that results from friendly relationships may not always be advantageous if it lessens the perceived need for vigilance. When causal ambiguity is high, trustworthiness may prove counterproductive (p. 608). This thesis argues that in the case of potentially irrelevant or uninteresting ideas friendly relationships may preclude the necessary mutual questioning and inquiry to enhance significant learning and knowledge processes.

Weick (2002) claims that a programme that is designed to facilitate learning, has to "encourage updating through improved situational awareness and closer attention to what is actually happening" (p.s9). The HRO research provided every opportunity to update the learning and knowledge processes the team was going through. The more we knew about HROs and the more we confronted research findings with MCompany's cases and examples to see whether there was a 'fit', the more interesting challenges we discovered forcing us to check our understanding of the mechanisms underpinning failure-free performance.

On the contrary, in the PPP project, once the findings from the systematic review started to emerge, the primary updating was arranging and labeling the dimensions that appeared to explain 'what makes a PPP succeed' rather than questioning the relevance and criticality of any of those dimensions. PPP was an area where MCompany was market leader as commented above facilitating a sense of infallibility. This recognised expertise in PPP could have created a situation where the people became locked in their 'practice' mindset unable to embrace a 'reflective' (Schön, 1987) mindset about that practice so that they could learn something new. Researchers tried to help in resolving this situation. They recognised that PPP was an area where 'practice' was ahead of 'theory', an example of what Ouden and Furrer (2003) call 'time lag gap'. In other words, a situation where the dissemination of research lags behind practitioners' knowledge. The Cranfield researchers suggested taking a concrete and specific aspect of PPP, such as trust, and exploring it in detail. The inertia the project had taken precluded a reformulation of the project approach, resulting in an entrenchment in 'defensive routines' (Argyris, 1985).

The HRO project, on the contrary, had a clear direction (regardless the problems associated with lack of planning). A presentation on HRO followed by a dinner with MCompany's key clients and senior staff had been set. A venue and a nice four-course meal had been booked and invitations to attend the event had been sent. The direction

was clear: to produce a presentation using the HRO research that would stimulate interesting debate amongst the audience and pitched MCompany a clever-thinking provider. The requirements of the presentation were clear: from MCompany's point of view, the presentation *had to be* interesting, from Cranfield's point of view it had to be supported by evidence. Marrying the two objectives was incredibly difficult. H8 tended to drift from the research findings and make up even a 'sexier' story line. The Cranfield team continuously reminded of the need to use research findings reasonably, i.e. not 'over claiming'. The Cranfield name was on the front slide and that was a matter of concern. The project leader delivered an interesting presentation on HRO to key clients. Although painfully set, there was at least a direction.

10. CONCLUSION

10.1. Introduction

The overall purpose of this thesis is to understand why the projects of the MC Centre differed so much in terms of learning and knowledge processes. This chapter presents the conclusions of the thesis summarising the key enablers and barriers to learning and knowledge processes. Conclusions to the challenges to learning and knowledge processes in management research-consulting are presented, based on the theoretical and the empirical work of the thesis. The findings outline the enablers to learning and knowledge processes that academics and consultants can employ, to facilitate the use of management research to inform managerial practice. The findings also summarise the barriers to learning and knowledge that academics and consultants may take into account, in order to minimise the difficulties of turning research into practice.

In the chapter, the limitations of the study are outlined and suggestions for further research are offered. The key findings are presented using a map of associations amongst the enablers and barriers. The first map of associations displays the different enablers, and how they contributed to learning and knowledge processes. The second map of associations exhibits the key barriers and how they limited learning and knowledge outcomes.

In the introduction to this thesis, it was argued that there is a relevance gap between management research and management practice. It was also argued that most studies address this issue from a 'supply' perspective, suggesting that the knowledge produced in academia should be more applicable and it should be transmitted to organisations more effectively. However, few studies have addressed the relevance gap from a 'demand side' or have addressed the co-production of knowledge in academic - consulting collaborations. This study explores the demand of management knowledge by addressing how individuals and organisations create, internalise, realise and routinise learning and management knowledge in a consultancy organisation. In so doing, this thesis contributes to theory by providing a theoretically-informed, empirically-grounded conceptualisation of enablers and barriers to learning and knowledge in academic-management consulting programmes.

The thesis uses the literature on Organisational Learning (OL) to help our understanding of the case. It uses different conceptions of knowledge (asset vs. process and process vs. outcome) in an integrated way. The study contributes to OL by presenting 'purposeful engagement' as a key overarching mechanism that connects the enablers and barriers of the content, the practices and the people in enhancing knowledge and learning processes. Purposeful engagement is presented to help explain the differences in learning and knowledge across the five research projects conducted in the MC Centre. A contribution to the theory of practice is suggested by the development of

tentative 'technological rules' drawing on Van Aken's (2001a; 2001b; 2004a; 2004b) 'design' approach to management science.

The thesis contributes to methodology by providing an exemplar of the adoption of systematic review and an evidence-informed approach to knowledge in the management field. In particular, it argues that systematic review can contribute to the integration of a highly fragmented field such as organisational learning and knowledge.

10.2. Key findings

10.2.1. Learning and knowledge processes

This section presents the key findings of the study. Four key processes were evidenced in the case. First, creating knowledge and learning opportunities; second internalising learning and knowledge; third, realising learning and knowledge and fourth, routinising learning and knowledge. A number of sub-processes or routines within each of these processes were identified. Table 10.1 summarises the key learning and knowledge processes found in the academic-management consulting programme. This summary table contains in columns 1 and 2, the key learning processes identified by Crossan, Lane *et al.* (1999) which were explained in chapter 3 and the knowledge processes found in the systematic review which were described in chapter 4. These processes have been revisited in light of the empirical data, and are described below (see Table 10.1 columns 3 and 4).

The *creation of learning and knowledge opportunities* was triggered by MCompany's recognition of the need to develop thought leadership, in order to differentiate itself from competitors. MCompany initiated the creation of learning and knowledge opportunities by searching for potential universities to partner with. The identification of relevant institutions was made by short-listing universities with research reputation and by talking to academics from the short-listed universities. Cranfield School of Management was chosen as the preferred partner and subsequently, resourcing was agreed to undertake collaborative research. An initial research project proved that the relationship between MCompany and Cranfield was viable and mutually beneficial, which led to the formation of the MC Centre. A co-production approach to management knowledge was adopted which emphasised the integration of the best available evidence in selected management topics, with consultant's experience.

The second key learning and knowledge process found in this study is the *internalisation* of learning and knowledge. In the context of the academic-management consultancy research programme, learning and knowledge was internalised through interpreting and understanding the research findings. Research findings were contextualised to enhance the relevance of existing evidence to the business needs of MCompany. For instance, principles such as 'redundancy' that were found in high reliability organisations, were discussed to ascertain the extent to which these principles were applicable to other private and public organisations. Research findings were also continuously negotiated and accepted when they were perceived to be adequate to inform practice. For instance, initial research on PPPs revealed that the literature was split in two broad categories. One, the managerial aspect of organising PPP; and two, the political aspect of defending or criticising PPP. The research team 'negotiated' and

accepted to conduct research on the managerial aspect of PPP. This thesis found that across the projects, some form of adaptation and transformation of research findings occurred prior to their assimilation and adoption. For instance consultants initially resisted to consider 'effective communication' as a key feature of HROs arguing that this was a very generic feature. The project team revisited the term 'effective communication' and adapted it to read 'precise patterns of communication using multiple channels'. Overall, learning and knowledge was internalised through the engaged discussions of research findings.

The third key learning and knowledge process identified in this thesis is learning and knowledge *realisation*. This process captures the mechanisms by which the potential benefits of the research projects are realised through conceptual and instrumental utilisation of knowledge and eventual exploitation of research findings. Conceptual used of research findings was evident in presentations to clients and discussions held in project meetings and workshops. Consultants also used concepts from research in bids and proposals for new consulting work. Press releases, internal documents and reports were produced, all of which are considered conceptual utilisation of research. Knowledge realisation occurred in the instrumental use and exploitation of research. Consultants at MCompany worked together with Cranfield academics to design and implement a change programme based on HRO principles. This intervention provided an opportunity to apply in a real organisation principles and ideas found in the research. In addition, the commission of this work provided funding that further reinforced the perceived value of the project.

1. Knowledge processes	2. Knowledge sub-processes included	3. Knowledge processes revisited	4. New Knowledge sub-processes included
Knowledge sourcing (Intuiting- Crossan, Lane et al. 1999)	- Recognition (of the need for knowledge) - Initiation - Search / Scanning - Identification - Acquisition / capture - Collection	**Creating knowledge and learning opportunities**	- Recognition (of the need for knowledge) - Initiation - Search / Scanning - Identification - Resourcing - Co-production of knowledge
Knowledge integration (Interpreting- Crossan, Lane et al. 1999)	- Interpretation / understanding - Absorption / assimilation - Acceptance - Adoption - Adaptation / transformation - Sharing / exchange - Internal communication, diffusion / dissemination	**Internalising**	- Understanding of context - Interpretation of - Contextualisation - Acceptance & adequacy - Adaptation / transformation - Assimilation - Adoption - Sharing / exchange - Emerging discovery

Knowledge use
 	
(Integrating- Crossan, Lane et al. 1999)
	- Replication
	- Imitation
	- Use / utilisation
	- Application / implementation
	- Exploitation
		Realising	- Use / utilisation:
			   a) Conceptual: internal communication, and external diffusion / dissemination
			   b) Instrumental: application / implementation
			- Exploitation

Knowledge routinisation (Institutionalising- Crossan, Lane et al. 1999)	- Review / evaluation - Re-development - Support - Embodiment - Institutionalisation - Storage	**Routinising**	- Follow up - Support - Institutionalisation

Table 10.1 Learning and knowledge processes in the MCompany-Cranfield collaboration

The fourth key knowledge and learning process is *routinisation* that refers to the processes through which new knowledge is incorporated to the routines of the firm, this was evidenced by changes to consultancy language, whereby terms such as 'SMoLTA', 'HRO' and 'Failure Free' became commonplace. The research was also used in bid proposals and numerous other documents. Such actions help to embed the research into the practices of the organisation. This can result in the institutionalisation of new knowledge, whereby this knowledge and learning transcends the individual and becomes part of systems, structures, and routines of the company.

These key knowledge and learning processes are interrelated and interdependent and should be seen as dynamic rather than linear or sequential. Overall, this framework is useful for exploring and understanding the subtleties of knowledge and leaning within and across organisations.

10.2.2. Enablers and barriers to learning and knowledge processes

The second objective of this thesis is to identify the enablers and barriers to learning and knowledge processes in an academic - management consulting research programme. These enablers and barriers are classified in three dimensions: 'content', 'practices' and 'people'. The key enablers are summarised in the next paragraph followed by the main barriers found in the case.

The key enabler of the content was a balanced combination of interesting, rigorous and relevant research. Key enabling practices were found to be those that stimulate the conceptual utilisation of knowledge in internal and external initiatives such as workshops, events with clients and also in bids and proposals. Similarly, implementing the findings in a real intervention as a form of instrumental use enhanced knowledge and learning processes. Extending the research findings beyond the initial insights also reinforced learning processes. The case of the MC Centre shows how engaged discussions and a co-production approach to management knowledge facilitates learning from research projects. The last key enabler was the clarity of exploitation mechanisms, which marked a difference in the outcomes of the different research projects.

In terms of barriers to learning and knowledge processes, lack of field data emerged as a key barrier since examples and cases helped consultants perceive the potential application and relevance of research for their practice. Lack of time to actively participate in the research projects precluded people's engagement in learning from research findings. Across the empirical work in the thesis, a perceived lack of clarity of purpose of the MC Centre and the research projects was reported to have precluded knowledge and learning processes. Engagement in learning and knowledge was severely jeopardised by a lack of continuity of key individuals.

In the following subsection, the enablers and barriers to learning and knowledge are analysed all together, providing a comprehensive map of the associations amongst them.

10.2.3. An explanation of the association of enablers to learning and knowledge processes

As explained in chapter 5 this thesis subscribes to critical realism. For critical realists there is a difference between 'causal laws' and 'patterns of events' (Bhaskar, 1978). Realism is concerned with identifying an explanation for the links between events, structures and tendencies. Following this line of reasoning, this section aims to offer an explanation of how the different enablers were perceived to be linked and how these enablers facilitated learning and knowledge processes.

This approach borrows from analytical techniques such as cognitive maps. Overall, cognitive maps are intended to represent how an individual explains the world around him/her (Eden, 1992). This thesis is an exploratory study of complex social phenomenon and it is virtually impossible to specify causal links between variables. In social science research it is rare for a specific event, condition, or characteristic to be sufficient by itself to produce an outcome. Therefore, when studying a complex social situation such as a collaborative research programme, there are always a constellation of components that act in concert to lead to a specific outcome. Any factor that represents a plausible step in the causal chain cannot be considered to be an extraneous factor (Rothman and Greenland, 1998). In this thesis, causal maps are used, not to indicate cause and effect relationships, but to produce, in diagrammatic form, the plausible antecedent events, conditions, and characteristics that were evident in each of the five projects and the associations between them.

One of the challenges of these maps is to decide how far back the researcher wants to go (Snook, 2002). In this thesis, the furthest reasonable event to take into account is the establishment of the MC Centre in 1999. Although the discussion of the enablers is not focused on any one project, most of the enabling aspects of the content are referred to the research project HRO, since it was the one perceived to be successful. In figure 10.1 the map starts on the top right corner. The associations depicted in the figure are presented sequentially for clarity of presentation and should not be interpreted as occurring in chronological order.

Boxes 1 to 6 in figure 10.1 provide some contextual information. MCompany contacted Cranfield in 1999 (box 1). After an initial agreement and a research project (the Strategic Management of Long Term Assets - SMoLTA) the MC Centre was founded (box 2). The aim of the centre was to become 'the foremost international centre for applied knowledge in infrastructure management'. The centre aimed to promote 'thought leadership' through its research activity, to help differentiate MCompany in the market place and to facilitate the preparation for its floatation in the stock exchange in June 2002 (box 3). Fourteen months after, MCompany merged with PCompany (box 4). The stakeholders expected the newly formed group to deliver increased rates of profit and growth (box 5). This expectation created a situation where winning new contracts and paid work became a priority.

Management Consultancy was especially under pressure to meet its turnover and profit targets (box 6). So far, this was the context within which the research projects were initiated. Within Management Consultancy, Strategic Consultancy had been established to create new thinking and to engage with clients at a senior level providing business

opportunities for MCompany. When the MC Centre was formed, Strategic Consultancy was not performing well from a commercial point of view (box 7).

After the collaboration between Cranfield and MCompany was formed, Strategic Consultancy adopted the ideas on high reliability organisation design (HRO) that Cranfield had presented and discussed (box 8). There was no prior related knowledge in the company (box 10) which may have led to HRO being perceived as novel (box 11) and thus interesting (box 15). Examples close to MCompany's business that illustrate HRO thinking were identified (box 12) and contextualised (box 13) all of which enhanced the perception of relevance (box 14).

When consultants perceived that emerging research findings were interesting and relevant, they were more willing to participate in the research projects, contributing to the co-production of management knowledge (box 18). Interim findings from research (box 19) went through iterations of testing and refinement of content, a process where some constructive conflict emerged (box 21) as a result of challenging the findings and understanding them (box 22). The co-production approach and systematic review placed an emphasis on synthesising the best available evidence, and thus, the process was perceived to be rigorous (box 17). Testing interim findings and conducting further research of the topics, created a positive feedback loop marked with 'F1'.

The need to develop Strategic Consultancy (box 7), and some senior management support and legitimisation of the research projects (box 34), helped create a meaningful purpose (box 36). That *meaningful purpose* was believed to be an enabler of paramount importance. A clear purpose was alimented by the specific definition of exploitation mechanisms (box 35) and nurtured by strong, intrinsic motivations to engage in learning and knowledge processes (box 9).

Individuals for whom the purpose of the projects and the overall MCompany-Cranfield collaboration was meaningful, became more readily engaged in knowledge and learning processes (box 23) which created a second positive feedback loop marked as 'F2'. Consultants guided by a meaningful purpose mobilised others (box 24) inviting them to participate in external (box 28) and internal (box 25) events. The external events were instances of strategic/symbolic use of knowledge (box 29) aimed at developing MCompany's brand in the market place (box 30). Internal workshops were considered instances of conceptual use (box 26) aimed at management development (box 27). In addition, research was used in instrumental ways conducting implementations of findings and fostering product development (box 33). The conjunction of product development, brand development and management was considered a manifestation of significant knowledge and learning. These associations are pictured in figure 10.1 in the next page.
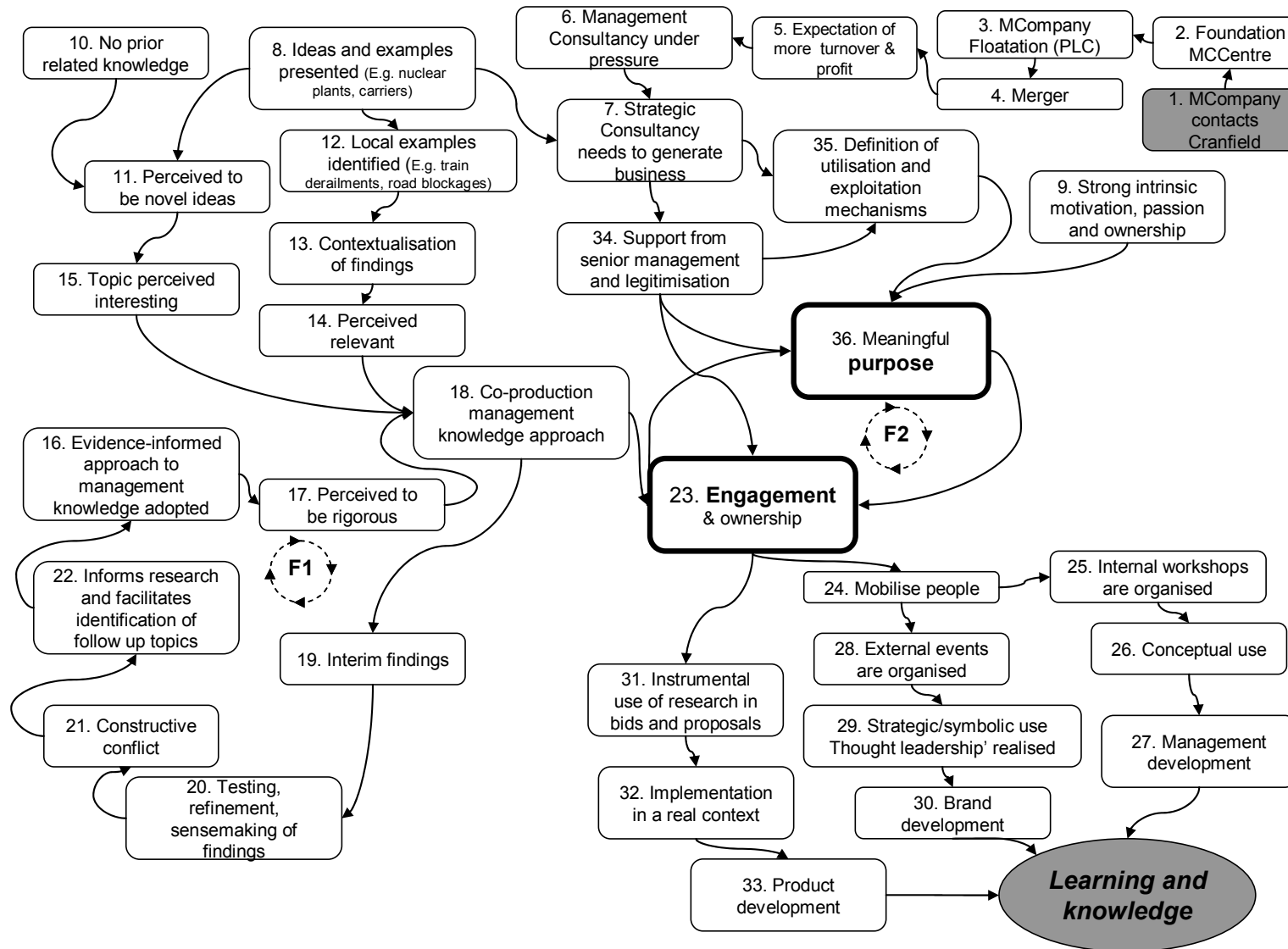
Figure 10.1 Map of associations of enablers to learning and knowledge processes

10.2.4. An explanation of the association of barriers to learning and knowledge processes

Boxes 1 to 6 in figure 10.2 depict relevant variables to understand the organisational context of the research projects. Starting from the top left corner, figure 10.2 shows how the Director of Management Consultancy was in a difficult position (box 7) as a result of the pressure to generate profitable business. This situation was worsened by tension created by the incongruous managerial and engineering cultures that existed in MCompany. The company had no previous experience in partnering with a university to conduct collaborative research (box 9) and a clear set of jointly agreed performance measures for the projects was not defined (box 10). Actors also perceived that there were unrealistic expectations at MCompany (box 11) about what the company could achieve from the programme. Given the lack of clear performance measures, the fulfilment of expected outcomes could not be effectively reviewed (box 12). Having unclear objectives and expected outputs for the research (box 13) also meant that the role of the MCompany-employed research consultant was ambiguous.

The person appointed as the MCompany-employed research consultant (A4) was perceived by many of the participants (see chapter 6 section 6.3.4) to be inadequate for the job (box 14). Interviewees consistently argued that the research consultant seemed to lack either the skills or the motivation for the task and his contribution was rated very poorly (box 15) particularly in project 2 (public-private partnerships - PPP). The PPP project leader (P20) recognised that the research consultant's underperformance had not been appropriately managed (box 16), impacting negatively in the PPP project. For instance, the research consultant failed to produce a series of case studies in a range of public private partnerships (box 17). The lack of field data, according to participants in the PPP project, limited the quality and insight of the research project (box 18). In addition to the lack of case studies, there was a lack of high quality existing research in this field, and some respondents noted that practice was ahead of theory in this area (box 19).

Other significant barriers to learning and knowledge processes were occurrences of group think and model I learning (see chapter 9). These precluded the mutual questioning of basic assumption Certain issues remained unchallenged, such as the vague research question of the PPP project (box 20). In addition, many respondents felt that the Centre was under-resourced (box 21). Lack of resources coupled with lack of time devoted to the research projects (box 22) may indicate that certain individuals were not fully engaged in the projects (box 23).

In terms of the relationships between individuals involved in the projects, there was a significant divide between the academics and consultants (box 24). The interview data revealed that some consultants had a stereotyped view of the academic world (box 25). Significant differences in the way academics and consultants work may have also contributed to the creation of unrealistic expectations (box 11).

The lack of agreed outputs, performance metrics and definition of outcomes (box 10) was associated with an unclear definition of exploitation and dissemination mechanisms for the research findings (box 26). This lack of clarity, limited the creation of a shared purpose (box 27) which is believed to have hindered the genuine engagement of consultants in learning and

knowledge processes (box 23). The lack of engagement in turn, did not stimulate an open dialogue to identify and jointly agree a shared purpose (box 27) creating a negative feedback loop identified with 'F1'.

The lack of engagement contributed to insufficient research outputs (box 28) in some projects. Given the limited number tangible research products in some of the projects, significant additional investments in the MC Centre were not made (box 29) and senior management support reduced (box 30) putting in jeopardy the learning from research. The lack of investment reinforced the perception of scarce resourcing which further contributed to a lack of outputs and engagement, creating a negative cycle, marked with 'F2'.

In the interviews, consultants acknowledged that Management Consultancy was under pressure (box 6). This situation, together with other organisational factors (box 31 - which are beyond the scope of this thesis) may have contributed to the decision of some people to leave MCompany. The lack of continuity of people such as project leaders and team members was reported by several interviewees to be a significant barrier to the realisation of learning and knowledge processes. The process outlined above can be seen graphically in figure 10.2.
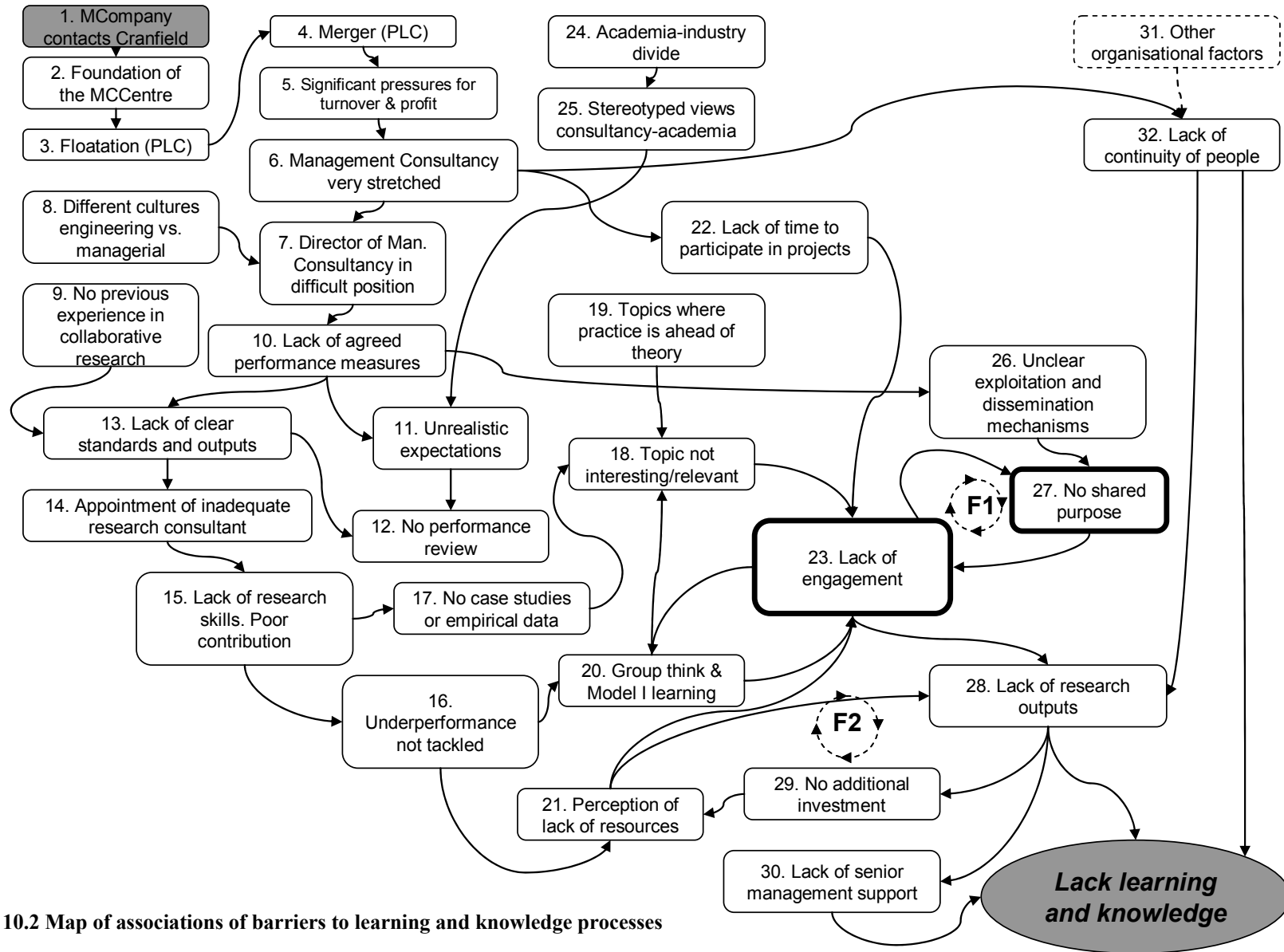
Figure 10.2 Map of associations of barriers to learning and knowledge processes

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10.2.5. 'Purposeful engagement': an integrative concept for understanding learning and knowledge processes

The study of learning and knowledge processes in the case of the MC Centre has enabled the researcher to identify two critical emerging themes: purpose and engagement. The meaning of these concepts, why they were important, and their implications for this research are explained below.

In the course of the study, some concerns were often discussed in project meetings, appeared regularly in agendas, and were mentioned in the semi-structured interviews by a number of interviewees. These concerns were, first, the definition of the aims of the MCompany –Cranfield collaboration; second, the explanation of the mission of the MC Centre; and third the clarification of the objectives of the research projects. Underpinning all these concerns is the idea of 'purpose'.

Purpose, in the context of this thesis, refers to an expected outcome of the research endeavour that is meaningful to the person given his/her role in the organisation (i.e. the person perceives valuable benefits). Purpose was important for learning and knowledge processes, and a perceived lack of purpose at various levels was deemed to have limited learning and knowledge processes. At the inter-organisational (MCompany-Cranfield) level, interviewees from both Cranfield and MCompany reported difficulties in perceiving a common purpose given the dissimilar cultures and the different objectives that academic institutions and management consultancies may need to pursue. The interview data revealed that at the organisational level, the mission of the MC Centre was not widely understood, despite the efforts to articulate and to explain it. Only one interviewee from Cranfield was able to articulate in a precise way, the mission of the MC Centre: to promote thought leadership for brand development, product development and management development. At the group level (project teams) the participants acknowledged lack of clarity of purpose in project 2 (PPP), project 3 (AssM) and project 4 (PFI). The results of these projects are already known: the PPP project was deemed to be partially successful, the AssM project was deemed to be largely unsuccessful and the PFI project was abandoned. These results suggest that purpose was a significant concern across the projects.

The purpose of the HRO project was, conversely, well understood in terms of the research content and the expected outcomes. The research question ('what are the characteristics of organisations that are able to trap, avoid or mitigate against system failure?') was documented in a review protocol and was understood, accepted and agreed by all team members. The expected outcomes from a MCompany perspective were clear: to organise events for disseminating research findings in workshops and presentations to clients ("I really wanted to take it [the HRO research] to clients" H8, Director of Strategic Consultancy 27/08/2003). Workshops and presentations to clients were organised energetically by the Director of Strategic Consultancy (H8) who claimed that "if you don't set those deadlines, if we don't do it, we'll never, ever do anything" (H8, Director of Strategic Consultancy 27/08/2003). Thus, these workshops acted as a clear goal and aspiration for the project team. The workshops and presentations were very well received within MCompany because they provided

opportunities to engage in discussions with senior managers from their key clients. The HRO project became a clear and meaningful purpose for both the individuals and the organisations involved. This meaningful purpose focused efforts and facilitated the engagement of individuals, which is the aspect that follows.

Engagement, in this thesis, refers to the individual's interest in the research content; the individual's contribution to project activities, and the individual's involvement with other project team members sharing knowledge and discussing insights from research.

People's engagement in the content of the research projects was inferred from interviewee's accounts on their interpretation of the research content. The engagement in the content of research was ascertained through a detailed analysis of the documents they produce and the contributions to drafts of articles, reports and presentations. In the HRO project, the project leader and Director of Strategic Consultancy stated that,

> "HRO is really interesting … I don't understand it, so let's go and do some more research on it" (H8, Director of Strategic Consultancy 27/08/2003).

He (H8) recognised that HRO was "a difficult concept [and that] you have to put a lot of work into it to understand it" (H8, Director of Strategic Consultancy 27/08/2003). At the HRO meetings on the 4th and 18th November 2002 (see chapter 7 section 7.2.3) significant tension was experienced. This tension resulted from the project leader's (H8) need to absorb the research findings to prepare the presentation to clients scheduled for the 20th November 2002. The project leader made every effort to understand HRO research findings and to contextualise them to make them relevant for MCompany clients. In the documents the project leader produced, he reorganised and reclassified the original research findings. Whilst the academic members of the research team were not satisfied with these changes and his interpretation of the research (Senior Research Fellow, A7), it does demonstrate that the project leader was engaged with the subject and was willing to adapt and use the research in creative ways.

In the PPP project, engagement was not as evident as in HRO. The MCompany consultants and executives who were involved in the project, despite their expertise in PPP, rarely challenged the research findings or the vagueness of the research question. MCompany consultants and executives did not question the novelty of the interim findings, which was found to be a significant flaw. In the AssM project, the initial focus of the project was problematic because it was initially framed in a way that made it virtually impossible to be researched. None of the MCompany consultants participating in this project proposed an alternative viable approach for the project, evidencing a low level of engagement in defining the content and the scope of the project.

Individuals showed engagement in activities and in actions when they used the research findings in different ways. This use of research was conceptual, instrumental and strategic (Beyer and Trice, 1982). In the HRO project, academics and consultants showed evidence of conceptual use of research in writing practitioner articles, including concepts derived from research in bids and proposals, and in organising workshops and presentations to clients to stimulate 'thought leadership' debates. The HRO findings were used instrumentally in a real life organisational intervention, devising diagnostic

and implementation tools. Furthermore, HRO research was used strategically by the project leader (H8) to gain profile and to build up internal reputation as an innovative thinking consultant. As he recognised,

> "I really wanted it work and it's my own personal objectives wanting to be famous for something ... so I wanted to be recognised inside MCompany as someone that was able to work with Cranfield and get out a superior product." (H8, Director of Strategic Consultancy 27/08/2003).

In the PPP project the only use of research was when the findings were presented to clients on the 24th June 2004. The Asset Management project did not produce significant use of research (for a summary of the utilisation of research findings across projects see section 8.2).

People's level of engagement with other project team members was indicated by their regular participation in meetings and by their input to discussions. Engagement was also evidenced by an individual's interest for the content and by efforts to internalise research findings, i.e. understanding, interpreting and assimilating the content of research. Lastly, individuals were engaged in research activities and in actions when they contributed to the organisation of dissemination events or applied research findings in their managerial decisions and actions.

The level of engagement in the project team differed across projects. In the HRO project, 19 people participated in project meetings (see chapter 2, section 2.4.2.2), 7 of them attending regularly. In the PPP project 13 people participated in project meetings (see chapter 2, section 2.4.3.2), 5 of them attending regularly. In the AssM project 11 people participated in project meetings (see chapter 2, section 2.4.4.2), 4 of them attending regularly. This shows a noticeable difference between the high level of engagement with the team in HRO, the moderately level of engagement with the team in PPP and the low level of engagement with the team in the AssM. In the PFI project, only two meetings were organised thus precluding sustainable social interactions. The BussT project failed to initiate, thus, no engagement occurred at all.

Overall, this section has concluded that the interplay between purpose and engagement helped to explain to a large extent the differences in learning and knowledge in the five projects. Purpose and engagement are believed to interact in mutually reinforcing ways. When a clear purpose is perceived, individuals may find it easier to engage in discussions and participate in meetings, to make an effort to internalise research, and to embark in devising courses of actions based on research findings. When individuals engage in discussing, thinking and acting, this may, in turn, nurture the sense of purpose. Purposeful engagement is coherent with the conceptualisation of learning and knowledge adopted in this thesis that recognises the cognitive, behavioural and social nature of learning and knowledge.

Based on the arguments presented above, is it proposed to use purposeful engagement as a mechanism to understand learning and knowledge processes in academic-management consultancy collaborations. Learning and knowledge processes can be seen as purposeful endeavours where behaviour and cognition are inextricably connected between them and tightly linked to the social interactions within which they occur. Learning and knowledge processes in the context of academic-management

consulting are not fortuitous phenomena but the result of achieving a meaningful purpose by means of a wide-ranging engagement.

In the MC Centre, the definition of the purpose of each of the research projects proved to be challenging. By its very nature, research is about 'aiming to knowing the unknown'. Thus, how can an individual define something s/he does not know? How can purpose be defined in the context of academic-management consulting research programmes? The study of purpose is known as teleology (from the Greek *telos*: end, purpose) and goes back to Aristotle, who attempted to describe final causality, the purpose of nature. Two types of causes are identified in teleology: extrinsic finality which relates to the utility obtained from accomplishing a purpose, and intrinsic finality which relates to the attainment of purpose for its own perfection (Bigelow, Rosenblueth et al., 1943). Different conceptions of *telos* have evolved since Aristotle that range from those that conceive purpose as a pre-determined entity (classical determinism), and those that consider purpose as spontaneous and self-organising (nonlinear and complexity science) (Alexander, 2002).

It is argued that as soon as some finality is perceived, purpose may emerge facilitating individuals' engagement in learning and knowledge processes. It may be intrinsic finality, such as participant's willingness to understand HRO because it was perceived to be interesting. It may also be the extrinsic finality of organising events with clients to promote 'thought leadership' or the expected potential to generate new business by applying HRO thinking in client organisations.

The PPP and AssM projects were regarded as having no clear purpose. Extrinsic finality was not clearly perceived or defined. As a Project Director claimed, "it wasn't until we needed to get to a challenge meeting that we actually defined things" (P23, Project Director – Roads and Rail, 01/02/2006). However, a meaningful purpose could have been to clarify the lack of clarity of purpose of PPP and AssM. This did not happen, perhaps because PPP and AssM were not perceived to be interesting.

To analyse whether the nature of purpose in the research projects was pre-determined or spontaneous and self-organising is beyond the scope this thesis. Possibly these two forms of purpose are not in contradiction and can coexist. Someone may not perceive a clear purpose or extrinsic finality up – front, but still engage in learning and knowledge processes if s/he perceives an intrinsic finality such as obtaining satisfaction from learning for the sake of learning. Learning can be a meaningful purpose by itself.

10.3. Contributions

This section presents the overall contributions of the thesis. It is divided in two parts specifying and locating the contributions. The first part details the contributions to theory, to practice and to methodology. The second part positions the contributions of this thesis within the organisational learning and knowledge field.

10.3.1. Specifying the contributions

10.3.1.1. To theory

This thesis contains findings that confirm, findings that amend, findings that refute and findings that add new theoretical insights to the organisational learning and knowledge literature. The thesis has confirmed aspects such participation and direct contact amongst people as facilitators of knowledge and learning processes and of research utilisation (Beyer and Trice, 1982; Hislop, 2003; Kalling, 2003; Sung and Gibson, 2005). It has also been confirmed the need (Agrawal, 2001; Leseure, Bauer et al., 2004) to allocate specific resources to enhance knowledge and learning processes as suggested in existing research (Cohen and Levinthal, 1990). The case study has also confirmed that attributes of the content of research such as novelty, tangibility, clarity and explicitness (Beyer and Trice, 1982; Kostova, 1999; Rich, 1991; Rogers, 1995) facilitate knowledge transfer. This study has also confirmed the importance of motivational factors, and has shown the importance of intrinsic motivations (Ipe, 2003; O'Dell and Grayson, 1998) to enhance learning and knowledge in academic-management consultancy collaborations.

The findings of the thesis amend certain aspects of existing literature on knowledge processes within and across organisations. When new knowledge or ideas are to be adopted in an organisation, the absence of proven previous success may limit the degree of adoption (Szulanski, 1996). However, if the ideas are perceived to be interesting, relevant and rigorous, the effect of the idea's unproven previous success in its adoption is minimised. Existing literature on the utilisation of social science research is inconclusive as to how important research quality is in fostering research utilisation (Beyer and Trice, 1982; NCDDR, 1996). This thesis has revealed that the quality of research is an important aspect for consultants. Propositions and intervention guidelines that are based on quality research provide confidence and legitimacy to act upon the research findings.

The pre-eminence of the concept 'relevance' within relevance gap debate (den Ouden and Furrer, 2003; Kelemen and Bansal, 2002; Starkey and Madan, 2001; Wilkerson, 1999; Wind and Nueno, 1998) is questioned by the findings of this thesis. The results of the five research projects explored, suggest that relevance may be a necessary but not a sufficient condition to enhance the utilisation of management research. Two projects were perceived to be relevant: AssM and BussT. However, the findings of these two projects were little utilised, since AssM was largely unsuccessful and BussT failed to initiate. On the contrary, the HRO project which was deemed to be highly successful and its content widely used, was perceived to be both relevant and interesting. A recent debate within the management scholar community has raised the issue of what makes management research interesting (Bartunek, Rynes et al., 2006). The findings of the thesis seem to indicate that 'relevance' and 'interest' are two separate dimensions of research. Relevant research appears to be associated with local problems and needs, and with potential for application to specific classes of problems. Interesting research on the contrary, seems to be associated to more general attributes such as novelty, stimulating, different, and insightful which are less context-dependent. Relevance and interest need not to be in conflict, and this thesis has explored an exemplar of relevant and interesting research: the HRO project. The empirical work, particularly the

repertory grid work has helped to identify key attributes of management ideas such as tangibility, relevance, interest, degree of definition, measurability, and generalisability.

There is agreement that prior related knowledge in the organisation facilitates the ability to absorb and exploit external knowledge (Cohen and Levinthal, 1990; Eriksson and Chetty, 2003; Kim, 1998; Van den Bosch, van Wijk et al., 2003). Contrary to this claim, the thesis has found that in management consultancy, prior related knowledge is not a precondition for absorbing and exploiting new, externally-generated knowledge. HRO was a new area for MCompany, yet the outcomes of the HRO project were considered to be highly successful. PPP and AssM were part of the core business of MCompany yet one was thought to be only partially successful and the other largely unsuccessful.

In the literature of knowledge transfer across organisations, cordial relationships are recognised as enablers to learning and knowledge processes (Gopalakrishnan and Santoro, 2004; Szulanski, Cappetta et al., 2004; Twomey, Twomey et al., 2000). In the HRO project, episodes of tensions within the team were experienced. The relationships with a key individual were very difficult. Despite the lack of easy relationships, HRO was successful in bringing about learning and knowledge. Conversely, in the PPP and in the AssM projects, the relationships were cordial, but the projects achieved a lower profile. This finding insinuates that the impact of the quality of interpersonal relationships in organisational knowledge need to be investigated in the wider context within which they occur, and in relation to other aspects such as the content and practices of learning and knowledge.

This thesis fills a vacuum of empirical research on learning and knowledge processes of academic management knowledge. The literature is rich in empirical studies that address how to best transfer manufacturing practices, or adopt product and technological knowledge. However, as the systematic review found (see chapter 4, section 4.6.1), there is a lack of empirical study of how *management research* is internalised, realised and eventually routinised. The systematic review revealed a scarcity of empirical work investigating business schools–industry knowledge transfer (Twomey, Twomey et al., 2000). In addition, the systematic review did *not* identify any high-quality research that investigates knowledge transfer between management schools and management consulting firms.

Overall, the thesis brings to the forefront of organisational learning and knowledge the concept of purposeful engagement. This overarching theme helps explain how learning and knowledge processes may be effectively enhanced when individuals engage in purposeful endeavours, or severely jeopardised when the purpose is unclear and the engagement mechanisms poorly understood.

10.3.1.2. To methodology

This thesis contributes to methodology by providing an early exemplar of systematic review in management research. As far as the author is aware, the HRO study (Marcos, Denyer et al., 2003a) was the first systematic review in the management field and became a prototype methodology for conducting systematic reviews in management studies (see Tranfield, Denyer et al., 2003). This prototype methodology was

subsequently disseminated[1] in a special issue of the International Journal of Management Reviews (Denyer and Neely, 2004). Chapter 4 was a further example of the systematic review methodology. Using systematic review approaches to locate, appraise and synthesise the science base facilitates audit trial and forms a sound basis for potential further research.

In this thesis systematic review has been instrumental in highlighting critical aspects of the field such as the heterogeneous ways in which knowledge has so far been operationalised. The systematic review has been useful in mapping the literature against a set of criteria including chronological and geographical dimensions. The systematic review on knowledge processes within and across organisations (chapter 4) in conjunction with the review of organisational learning (chapter 3), are believed to contribute to existing scholarly effort (Bapuji and Crossan, 2004; Crossan, Lane et al., 1999; Easterby-Smith, Crossan et al., 2000; Elkjaer, 2004; Gnyawali and Stewart, 2003; Small and Irvine, 2006; Vince, Sutcliffe et al., 2002) to integrate and take stock of this thriving field.

10.3.1.3. *Contribution to practice: Technological rules to enhance knowledge and learning processes*

Whilst the primary aim of this thesis is to make a contribution to theory through providing an explanation of the case, it is also possible to make a contribution to practice in the form of tentative recommendations to both the academic and practitioner communities. As such, the purpose of this section is to go beyond description and analysis, and move towards solution-oriented knowledge (Van Aken, 2004a). Van Aken differentiates between 'Management Theory', based on the paradigm of the design sciences (Romme, 2003; Van Aken, 2001a), and 'Organization Theory' which is based on the paradigm of the explanatory science, and argues that the output of a design science, such as engineering, medicine or management, should be technological rules.

Van Aken (2004b) defines a technological rule, drawing on Bunge's (1967) philosophy of technology, as a "chunk of general knowledge, linking an intervention or artefact with a desired outcome or performance in a certain field of application" (p. 228). Technological rules are argued to be the product of management theory, and are aimed to be used by professionals in their practice.

This thesis has the potential for the development of tentative technological rules, since the study has many of the characteristics of design science research outlined by Van Aken (2004b). The aim of design sciences is to develop valid and reliable knowledge to be used in designing solutions to field problems (p.225). This thesis draws on both valid and reliable theoretical (see chapters 3 and 4) and empirical data (chapters 6, 7 and 8). Van Aken (2004b) argues that the typical research strategy of design science is clinical research, that is, research on the performance of interventions such as evaluation research. This thesis employs methods that are widely used in qualitative evaluation

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[1] For details of the dissemination and publications related to this thesis see pages ix and x.

research (Patton, 2002; Weiss, 1998). The thesis has assessed how effective each research project was in facilitating learning and knowledge processes.

The potential for the development of tentative technological rules of this thesis also lies in the fact that the design science paradigm favours the multiple case study, where the technological rules are developed and tested by the researcher in close collaboration with the people in the field. Van Aken (2004b) argues that the researcher can develop knowledge on the basis of reflection and cross-case analyses. Both close collaboration and cross-project comparison are distinctive features of this thesis. Lastly, van Aken (2004b, p. 234) argues that social science provides vital inputs to the management field, and that insights from social science can be used in developing technological rules (p.234). This thesis draws on social sciences, particularly work and organisational Psychology and Sociology (see chapter 9) to help explain the case. The use of social sciences facilitates the identification of generative mechanisms and also facilitates separating these from the context.

Van Aken (2004b; 2005) makes a distinction between *algorithmic* and *heuristic* technological rules. An algorithmic rule is a *precise* instruction to do something (X) in order to obtain the desired result (Y), typically in a quantitative format (for example an instruction of how much and how frequently to give a patient a certain drug to cure his/her disorder). A heuristic rule gives a *type* of intervention or system to be used to obtain the desired result, typically in a qualitative format.

The key reason why this study is particularly useful for creating technological rules is that the research clearly highlights and specifies the crucial components of a technological rule. Van Aken (2004) argues that a technological rule has four components: 'context factors', 'solution concepts', 'generative mechanisms' and 'outcomes'. These concepts can also be seen in the realist evaluation work of Pawson and Tilley (1997) and in the realist synthesis approach of Pawson (2002). Pawson argues that,

> "the reviewer's basic task is to sift through the mixed fortunes of a programme attempting to discover those contexts (C+) that have produced solid and successful outcomes (O+) from those contexts (C-) that induce failure (O-). The review process is then repeated across a number of additional studies featuring the same underlying mechanism, with the aim of gathering together the various permutations of success and failure. In realist jargon, the aim is to differentiate and accumulate evidence of positive and negative CMO configurations" (Pawson 2002, p 346). (Note: 'M' refers to 'mechanism').

The results of realist synthesis take the form of a revised model designed to explain for whom, in what circumstances, in what respect and why, certain interventions produce preferred outcomes (Pawson, 2002). The researcher then inspects the model in a range of contexts. For example, Pawson (2002) inspects the value of 'incentives' as a policy instrument in six domains, health, safety, corrections, transport, housing, and higher education. In this thesis there are five domains: the research projects.

Context refers to the characteristics of the participants and the circumstances of the programme under investigation. In this thesis 'people' and the subject 'content' of each research project are considered context. The key component of the rule is a general

solution concept for the type of business problem in question. In this thesis, the primary solution concept is the co-production approach to management knowledge. This approach aims to blend the best available evidence with professional experience to inform consultancy work. The solution concept is a kind of intervention or system to be used to solve managerial problems. The generative mechanisms can be seen as the processes that are triggered by the interventions. The generative mechanisms may take the form of a basic theory that explains why some outcomes occur (Denyer, Tranfield et al., in review). The context, solution concepts, mechanisms and outcomes identified in this study in relation to learning and knowledge outcomes are outlined below, drawing on the findings of project 1 HRO (Table 10.2).

Table 10.2 (overleaf) presents the details of a technological rule to enhance learning and knowledge processes in academic-management consulting collaborations. A special characteristic of technological rules lies in their configurational nature (Denyer, Tranfield et al., in review). This thesis enabled the researcher to argue that,

> if one aims to foster learning and knowledge processes in an academic-management consulting research programme (Y), then, s/he should consider encouraging *purposeful engagement* (X); and in so doing,
>
> (1) Appoint as leaders of research projects, individuals that have a strong intrinsic motivation towards the project, and that like to be involved in thought leadership initiatives (X1).
>
> (2) Clarify the purpose of the projects up front and verify that this purpose is clearly understood (X2).
>
> (3) Ensure that the propositions derived from research have a strong rational discourse and internal consistency (X3).
>
> (4) Make explicit the business case for engaging in research and confirm people understanding and support for it (X4).
>
> (5) Challenge assumptions. Identify the taken for granted assumptions that may be jeopardising the development of the business (X5).
>
> (6) Allocate dedicated resources to support the learning and knowledge activity (X6).
>
> (7) Identify cases that exemplify the intended learning, particularly cases that people can understand and relate to (X7).
>
> (8) If learning and knowledge is triggered by research, use rigorous methods to conduct it (X8).
>
> (9) Promote the conceptual and instrumental use of research (X9)…

When defining the solution concepts, it must be acknowledged that elements of organisational design are multifaceted and interdependent. The various significant components of the context need to be taken into account in an integrated fashion.

COMPONENTS OF THE TECHNOLOGICAL RULE	DETAILS of the HRO PROJECT
1A. CONTEXT – Content (subject theme of the research project).	- *Research perceived to be relevant*: addressed both general and specific issues that the clients have. It was related in some way to the consultants' sphere of work. People thought this project was topical, had potential to develop tools, was usable and was sellable. - *Research perceived to be interesting*: The project was perceived to be highly interesting and was described as fascinating, sexy and exciting, intellectually stimulating, new and novel. - *Research perceived to be rigorous*: HRO ideas were well grounded in research, conducted using systematic review. - *The scope and focus were clear*: initially, to understand the characteristics of high reliability organisations. Subsequently to explore development of organisational failures. - *Examples and cases:* the research was illustrated with numerous cases and examples of well publicised organisational failures. - *Matched the academic and the practitioner agendas*: it was part of the Cranfield research agenda and had application in sectors where MCompany was interested such as water, rail and roads.
1B. CONTEXT – People (project team).	- *Engagement in and ownership of the project*: The project leader 'owned' the project taking it personally. He was determined to make the project successful. - *Support from peers, partners, and senior managers*: The academic team heavily assisted the development of the project. Senior managers supported and legitimised its rollout. - *A real business need*: the project leader was under pressure from the organisation to develop Strategic Consultancy into a profitable business.
2. SOLUTION CONCEPTS – Practices (actions, tasks and project routines).	Overall solution concept: *A co-production approach to management knowledge* using systematic review. Key solution concepts were: - *Internal formal dissemination*, e.g. away days, workshops, etc: Three large internal management development workshops were organised. - *External dissemination to clients*: Five events with senior representatives from key clients were organised. Two of these were sector specific (highways and gas industries). - *Utilisation of the research findings in bids and proposals*: Presentations in 2 companies and inclusion of HRO thinking in at least two bids (DEFRA & Highways Agency). - *Implementing the findings in a real intervention*: Implementation of HRO in H Highways 2005-2006. - *Follow up and development of initial research findings*: Initial research on organisational reliability was followed by research on organisational failure. - *Interactive aids to present the findings*: Large collages displaying key research findings were used. - *Publications and outputs*: practitioner and academic papers were produced as part of the research.
3. GENERATIVE MECHANISMS – Explanation	Overall generative mechanism: *purposeful engagement*. The perception of a meaningful expected outcome of the research endeavour triggered a high level of interest in the content and the project activities. Key generative mechanisms were: - *Strong intrinsic motivation*: A clearly displayed and admitted strong motivation of the project leader. Expectation of making an impact within MCompany is explained by expectancy theory (Vroom, 1995). - *Clarity of intent*: the project leader has to generate business. This triggers his efforts towards a specific goal. Goal setting theory (Locke and Latham, 1978) helps understand this mechanism in relation to task performance. - *HRO research offers new perspectives*. It was argued that HRO was a new way of assessing performance. This perception was triggered by the powerful rational discourse of the idea (see Abrahamson 1996). - *Need to be perceived as innovative*: MCompany was determined to be seen a thought leader in its market. Within MCompany, Strategic Consultancy is charged to develop thought leadership. This triggers a 'hunger' for new ideas. This is explained by institutional theories in relation to the adoption of management ideas (see Sturdy, 2004). - *Challenge assumptions*: HRO research is seen as challenging some taken for granted assumptions such as the 'efficiency mindset' that drives organisations' strategy in a number of sectors. This is explained by the Sociology of the interesting (Davis 1971).
4. OUTCOMES	A project perceived to be highly successful. Three knowledge and learning processes are accomplished. First, 'creating knowledge and learning opportunities', second, 'internalising'; and third, 'realising' knowledge and learning. The routinisation of HRO knowledge in MCompany may occur in the future.

Table 10.2 A 'technological rule' of learning and knowledge processes in academic-consulting collaboration

The accomplishment of a desired outcome in a given setting may require more that just doing X1. Practitioners may need to implement $X_1 + X_2 + X_3 + \ldots X_n$. In other words, the technological rule (purposeful engagement) is comprised of a configuration of solution concepts (motivation, incentives, control mechanisms, persuasion, clarity) that produce a particular outcome (learning and knowledge) in a specific context (academic - consulting research programmes) (Denyer, Tranfield et al., in review).

This thesis when exploring learning and knowledge processes has acknowledged the complex, multi-faceted nature of learning and knowledge (Crossan, Lane et al., 1999). The conception of learning and knowledge employed in this study is purposefully chosen, and takes into account cognitive, behavioural and social aspects of the phenomena. The exploration of knowledge and learning was operationalised using a range of methods of data collection and analysis able to cope with this complexity.

10.3.2. Locating the contributions

In articulating the contribution of the thesis, it is useful to draw on Easterby-Smith, Antonacopoulou, Simm *et al.* (2004) essay titled *'Constructing contributions to Organizational Learning'* that builds on Locke and Golden-Biddle's (1997) work. The former authors specify that a contribution is such when it provides a conceptual development that can be achieved through four strategies: the first, linking into and encapsulating an ongoing debate or conversation; the second, by putting together streams of work and ideas within the same field which have been previously been separate; third, introducing concepts from outside the field and fourth, occasionally, from 'blue sky' thinking. This thesis has enabled the researcher to make a contribution through the first three strategies.

First, this thesis links into the relevance gap debate encapsulating existing contributions and proposing alternative ways of exploring the divide between management research and management practice. Most of existing literature points at the nature and content of management research, the structure of the academic organisations, the way in which management research is disseminated, and the academic-practitioner relationships, as the principal causes for the gap between theory and practice in academic management knowledge. In this thesis an alternative approach is taken, claiming that in addition to acknowledging these 'supply' factors, a 'demand' perspective offers new insights to understand the lack of utilisation of management research.

In particular, the thesis has identified four distinctive knowledge processes (creating knowledge and learning opportunities, internalising, realising and routinising). Managers and practitioners could employ different strategies to enhance the impact of academic management research in each of these different processes. Overall, the thesis provides a theoretically informed, empirically grounded conceptualisation of enablers and barriers to learning and knowledge process in academic-management consulting research programmes. This contributes to Crossan, Lane et al.'s (1999, p.535) call to conduct research on "the mechanisms that enhance or restrict the stocks and flows of learning".

Second, this thesis attempts to synthesise streams of work from the organisational learning and knowledge literatures which have been so far separate. *Purposeful*

engagement is proposed as the overarching integrating theme to comprehend and to enhance learning and knowledge processes in academic-management consulting research programmes.

Third, in trying to explain the differences in knowledge and learning processes across projects, this thesis introduces concepts from outside the field to help our understanding of the case. Research utilisation and the utilisation of social sciences are bodies of literature that have remained largely under-cited by OL scholars, and in this thesis research utilisation and the utilisation of social sciences are used to structure the findings of the systematic review. These literatures became a solid foundation for the analysis of the studies included in the review and provided the building blocks of the analytical framework: 'content', 'practices' and 'people'. Other concepts from work Psychology such as motivation or commitment were used to better understand the case.

10.4. Suggestions for further research

This study has opened up potential fruitful avenues for further research. The first is replicating the study in a similar context in order to confirm the adequacy of the enablers and barriers to learning and knowledge processes identified in this thesis. Further research could be conducted to further investigate the specific enablers and barriers that affect particular learning and knowledge processes.

The exploratory nature of the thesis makes it a good starting point for testing some of the findings in larger samples, potentially using quantitative methodologies. In particular, other researchers could operationalise the constructs and attributes of management ideas identified in the repertory grid interviews.

A motivation for conducting this research was to understand the divide between management research and management practice. Management scholars would benefit from comparative studies investigating the utilisation of research by practitioners in other (design) disciplines such as engineering and medicine.

10.5. Limitations of the study

The main limitation of this research is its context-specificity. Data is collected from a single organisation which makes research findings hardly generalisable to wider populations of organisations. In case study research, however, generalisability is not an aim, as the purpose is to understand a phenomenon in the context in which it occurs. Pettigrew (1985) argues that "single case studies are capable of developing and refining generalisable concepts and frames of reference" (p.242).

This study has sought to gain an understanding of the underpinning mechanisms of learning and knowledge processes, which makes in-depth understanding more relevant than generalisation. This supports Gummesson's (1991) claim that good descriptive or analytic language by which one can grasp the important characteristics of the system, offers reasonable possibilities for generalisation (p.78).

The uniqueness of the case study is countered-balanced by its revelatory opportunity (having an extraordinary access) and its longitudinal nature (knowledge processes can

only be observed along a protracted period of time and this study covers a five-year period). In addition, the limitation of the specificity of the case is compensated with the use of several methods of data collection to gain as deep understanding as possible of the phenomena under investigation. However, whilst the single case allows an in-depth analysis of the context, it is difficult to generalise to other settings.

Another potential limitation is the risk of 'going native' as a result of the intense and prolonged engagement with the research setting. This could impact upon the researcher's bias in interpreting the data and participant's experiences. In order to minimise this potential bias, tentative findings and speculations were continuously checked with peers and colleges. The researcher engaged in self – reflection to identify sources of bias or predispositions towards/against the object of research.

10.6. A final word

In this study, I have been extensively and deeply involved in the research setting. I was directly involved in the life of the MCompany-Cranfield School of Management collaboration for the whole duration of my doctoral research since September 2001. I experienced excitement and enthusiasm when consultants used research findings as well as frustration and disappointment when findings were misinterpreted. I got to know the research team at Cranfield very well, and spent a lot of time with MCompany's consultants and executives. Given this involvement and participation, the observer's own experience is considered important and a legitimate source of data (Brewer, 2000). In reporting qualitative research, Richardson (2000) argues that writing involves us not only in making sense of the world, but also in comprehending our relationship to the world, discovering things about ourselves as we discover things of the phenomenon under study. Both 'the data' and 'my relationship with the data' constitute valuable inputs to illuminate the processes of knowledge and learning in the MC Centre. Both processes are rigorously handled but inevitably intertwined to illuminate an extraordinary case of diverse learning and knowledge outcomes in the same academic – management consulting research programme.

Reflecting on my position towards the study, I always regarded my role as a 'researcher' whether as a doctoral researcher only or making my doctoral research in parallel with the IMRC 19 grant work. In this role, my sole drive was to conduct both my doctoral as well as the desk research in the grant as rigorously as I possibly could. Any influence I might have exerted to the group was as a result of the work I undertook as research officer. To have an indication of the potential influence I could have had, and in order to explore individual's opinions about myself, the semi structured interviews contained a question about how people perceived my role across the projects. All interviewees referred to me in terms of the work I had done and no mentions to any potential influence at personal/group level were made. This enabled me to reasonably argue that the nature of my influence was primarily based on the 'technical' work I undertook, and thus the research officer position could be treated independently.

At a personal level, just to say that writing this thesis has been the most intense experience of purposeful engagement of my life.

"Perhaps the most powerful message of his [Argyris'] scholarship is to *take learning seriously* not only as a phenomenon to be studied, but as *a way of living*". (Antonacopoulou, 2004 p.381) Emphasis in the original.

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Apendix A1

Systematic review keywords and searches

Systematic Review:
Knowledge processes within and across organisations

Sistematic searches: Figures	
Databases searched	**6**
Keywords used	**85**
Searches conducted	**102**
References retrieved	**1,581,824**
References filtered	**2,380**
References included in database (discard of duplicates)	**2,069**
Considered for review	**740**
Short listed (after applying selection criteria)	**133**
Included for review (after applying quality assessment)	**107**

Keywords list

Management Knowledge	Management Ideas	Management Fads	Research utili*ation	Research into practice	Research impact
Relevance gap	Adoption of ideas	Adoption of innovation	Collaborative research	Research outcome?	Research implementation
Techniques	Information		Research translation	Research influence	Research and practice
Knowledge adoption	Knowledge utili*ation	Knowledge transfer	Research application	Action research	Research led practice
Knowledge structures	Knowledge use	Knowledge acquisition	Research transfer	Research communication	Research assimilation
Knowledge integration	Sensemaking knowledge	Knowledge worker	Linking research	Research contribution	Research adoption
Knowledge into action	Knowledge use	Knowledge into practice	Research dissemination	Research absorption	research transmission
Knowledge consumption	Knowledge based change	Knowledge creation	Evidence based	Evidence based policy	Evidence based practice
Knowledge dissemination	Knowledge diffusion	Knowledge assimilation	Evidence use (or use of evidence)	Evaluation use	Evidence into practice
Knowledge absorption	Knowing	Knowing-doing gap	Effective practice	Effective adoption	systematic review
knowledge impact	knowledge application	Absorptive Capacity	Impact on practice	Influence practice	Research evidence
Conceptual use	Instrumental use	Strategic use	Managers	Researches	Univerisity-Industry
Participation	Engagement	Involvement	Management	Business	Organization
Relevance	Usefulness	Actionable	Collaboration	Partnership	
Academics	Scholars	Practitioners			

No. of keywords **85**

Search strings

1	*relevance gap*
2	*(knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)*
3	*(use OR utili*ation OR impact OR action OR practice OR application OR influence)*
4	*(diffusion OR dissemination OR transmission OR transfer OR translation)*
5	*(adoption OR acquisition OR consumption OR creation OR assimilation OR integration OR absorpti*)*
6	*(Knowledge structure?) OR (sensemaking knowledge) OR (knowing doing gap) OR (knowledge based change)*
7	*evidence AND (into practice OR adoption OR use OR utili*ation OR effective practice OR impact in practice OR influence)*
8	*(academic? OR scholar? OR researcher? OR university) AND (manager? OR practitioner? OR industry) AND (collaborat? OR participat OR engage? OR involve? OR partner?)*
9	*(Conceptual OR instrumental OR strategic) AND (use OR utilization)*
10	*review OR overview OR synthesis OR summary OR synopsis*

No. Search Strings **10**

Database: Abi Proquest

Collections: ABI/INFORM Global / ABI/INFORM Trade & Industry/ Applied Science & Tech Plus
Dates: 1990 onwards
Field: all fields, SCHOLARLY JOURNALS ONLY
WILCARDS: "?" For a character, "*" truncation for various characters
Date of search: 10-21 May 2004

#	Keyword	Search string 1		Search string 2		Search string 3		Search string 4		Search string 5		Search string 6		Search string 7		Search string 8		Search string 9		Search string 10	
1	relevance gap	10	7																		
2	(knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)	?		100000	Limit																
3	(use OR utili?ation OR impact OR action OR practice OR application OR influence)	?		136000	Limit	10000	Limit														
4	(diffusion OR dissemination OR transmission OR transfer OR translation)	?		see 12 & 13	Limit	23132- see 12	Limit	19743	Limit												
5	(adoption OR acquisition OR consumption OR creation OR assimination OR integration OR absorpti*)	?		see 14, 15, 16	Limit	2326- see14&1	Limit	103	7	62343	Limit										
6	("Knowledge structur*") OR ("sensemaking knowledge") OR ("knowing doing gap") OR ("knowledge based change") OR (knowledge W/6 sensemaking)	?		127	11	57	12	11	6	31	5	130	15								
7	evidence AND ("into practice" OR adoption OR use OR utili?ation OR "effective practice" OR "impact in practice" OR influence)	?		142	2	7769	Limit	126	6	230	6		?	see 22	Limit						
8	(academic* OR scholar* OR researcher* OR universit*) AND (manager* OR practitioner* OR industry) AND (collaborat* OR participat* OR engage* OR involve* OR partner*)	?		131	10	699	Limit	126	22	112	9		?	23	2	101	49				
9	(Conceptual OR instrumental OR strategic)	?		613	45	135	7	269	32	111	5		?	83	0		?	see 23	Limit		
10	(review OR overview OR synthesis OR summary OR synopsis) AND NOT book	?		see 17	Limit		?	170	6	119	3		?	264	3		?		?		?
11	TI= (knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*) AND (use OR utili?ation OR impact OR action OR practice OR application OR influence)	?		4536	61		?		?		?		?		?		?		?		?
12	(use OR utili?ation OR impact OR action OR practice OR application OR influence) AND (diffusion OR dissemination OR transmission OR transfer OR translation	?		3713	Limit		?		?		?		?		?		?		?		?
13	(use OR utili?ation OR impact OR action OR practice OR application OR influence) AND (diffusion OR dissemination OR transmission OR transfer OR translation	?		795	71		?		?		?		?		?		?		?		?
14	(use OR utili?ation OR impact OR action OR practice OR application OR influence) AND (adoption OR acquisition OR consumption OR creation OR assimination OR integration OR absorpti*)	?		6298	?		?		?		?		?		?		?		?		?
15	(use OR utili?ation OR impact OR action OR practice OR application OR influence) AND (adoption OR acquisition OR consumption OR creation OR assimination OR integration OR absorpti*)	?		225	28		?		?		?		?		?		?		?		?
16	(use OR utili?ation OR impact OR action OR practice OR application OR influence) AND (adoption OR acquisition OR consumption OR creation OR assimination OR integration OR absorpti*)	?		270	24		?		?		?		?		?		?		?		?
17	TI= (review OR overview OR synthesis OR summary OR synopsis) AND (use OR utili?ation OR impact OR action OR practice OR application OR influence)	?		421	19		?		?		?		?		?		?		?		?
18	(diffusion OR dissemination OR transmission OR transfer OR translation) AND (adoption OR acquisition OR consumption OR creation OR assimination OR integration OR absorpti*)	?			?	368	13		?		?		?		?		?		?		?
19	evidence AND ("into practice" OR adoption OR use OR utili?ation OR "effective practice" OR "impact in practice" OR influence)	?			?		?		?		?		?	207	4		?		?		?
20	evidence W/10 ("into practice" OR adoption OR use OR utili?ation OR "effective practice" OR "impact in practice" OR influence)	?		106	8		?		?		?		?		?		?		?		?
21	(academic* OR scholar* OR researcher* OR universit*) W/5 (manager* OR practitioner* OR industry) W/5 (collaborat* OR participat* OR engage*)	?			?	219	29		?		?		?		?		?		?		?
22	evidence AND ("into practice" OR "effective practice" OR "impact in practice")	?			?		?		?		?		?	30	7		?	180	14		?
23	Knowledge OR research	?			?		?		?		?		?		?		?		?		?
24	(resource based view OR knowledge based view)	116	16		?		?		?		?		?		?		?		?		?
24		126	23	253377	279	19247	61	20548	79	62946	28	130	15	607	16	101	49	180	14	0	0

Total no of articles 357262
Potentially relevant 564
No of searches 24

Database: EBSCO
Collections: Business source premier
Dates:1990-2004. peer reviewed
Field:Default
WILCARDS: "?" For a character, "*" truncation
Date of search: 24 May-

#	Keyword string	Search string 1		Search string 2		Search string 3		Search string 4		Search string 5		Search string 6		Search string 7		Search string 8		Search string 9		Search string 10	
1	relevance gap	8	7																		
2	(knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)	?		248339	Limit																
3	(use OR utili?ation OR impact OR action OR practice OR application OR influence)	?		88030	Limit	>10000	Limit														
4	(diffusion OR dissemination OR transmission OR transfer OR translation)	?		6983	Limit	see 13		5799	Limit												
5	(adoption OR acquisition OR consumption OR creation OR assimination OR integration OR absorpt*)	?		779	16	243	28	156		>10000	Limit										
6	(Knowledge structure*) OR (sensemaking) OR (sense making) OR (knowing doing gap) OR (knowledge based change)	?		141	10	175	12	81	17	46	3	142									
7	evidence AND ("into practice" OR "effective practice")	?		243	11	97	4	107	4	199	2	11		112	4						
8	(academic* OR scholar* OR researcher* OR universit*) AND (manager* OR practitioner* OR industry) AND (collaborat* OR participat OR engage* OR involve* OR partner*)	?		197	34	208	12	201	18	90	2	13	2	249	17	45	14				
9	(Conceptual use OR instrumental use OR strategic use)	?		93	3	165	1	10	0	29	0	4	0	11	0	197	2	288	4		
10	review OR overview OR synthesis OR summary OR synopsis	?		731	15	?		?		?		?		?		?		?		?	
11	TI=(use OR utili?ation OR impact OR action OR practice OR application OR influence)	?		2465	Limit	?		?		?		?		?		?		?		?	
12	TI=use OR utili?ation OR impact	?		1160	143	?		?		?		?		?		?		?		?	
13	ti=(use OR utilization OR impact OR application OR influence OR diffusion OR dissemination OR transmission OR transfer OR translation) AND (knowledge OR research)					942	96			?		?		?		?		?		?	
13		8	7	349161	232	1830	153	6354	55	364	7	170	11	372	21	242	16	288	4	0	0

Total no of articles   358789
Potentially relevant   506
No of searches   13

Database: Web of Science
Full search. Collections: SSCI, A&HCI
Dates: from 1990
Field: all fields or otherwise indicated
WILCARDS: "?" For a character, "*" truncation
Date of search: 15 April- 15 May 2004

#	Search terms	SS1		SS2		SS3		SS4		SS5		SS6		SS7		SS8		SS9		SS10	
1	*relevance gap*	7	7																		
2	*(knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)*			>100000	see 26																
3	*(use OR utili*ation OR impact OR action OR practice OR application OR influence)*	see 12	100000	Limit	116648	Limit															
4	*(diffusion OR dissemination OR transmission OR transfer OR translation)*	?	5329	Limit	10966	Limit	?														
5	*(adoption OR acquisition OR consumption OR creation OR assimilation OR integration OR absorpt*)*	?	998	71	1761	Limit	3469	Limit	100000	Limit											
6	*(Knowledge structure*) OR (sensemaking knowledge) OR (knowing doing gap) OR (knowledge based change)*	?	436	33	183	7	24	4	78	4	407	see23									
7	*evidence AND (into practice OR adoption OR use OR utili*ation OR effective practice OR impact in practice OR influence)*	?	9913	25	21506	Limit	1050	Limit	1829	Limit	409	13	21903	Limit							
8	*(academic* scholar* OR researcher*) AND (manager* OR practitioner*) AND (collaborat* OR participat* OR engage* OR involve* OR partner*)*	?	727	27	673	29	62	7	126	11	1	1	81	6	1052	Limit				
9	*(Conceptual use OR instrumental use OR strategic use OR symbolic use)*	?	134	38	271	9	11	4	37	6	0	?	25	1	2	1	271	11		
10	*review OR overview OR synthesis OR summary OR synopsis*	?	?		?	see 17		?		?		?		?		?		?		?	?
12	TI=((diffusion OR dissemination OR transmission OR transfer OR translation) AND (knowledge OR research OR knowing OR information OR idea* OR fad*))	?	8216	41	?		?		?		?		?		?		?		?	?	
13	TI=(knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)AND TI=(use OR utili?ation OR impact OR action OR practice OR application OR influence)AND TI=(management OR organi?ation*)	?	381	48	?		?		?		?		?		?		?		?	?	
14	TI= management AND (knowledge OR knowing OR information) AND (use OR utili?ation OR impact OR into action OR into practice OR application	?	242	17	?		?		?		?		?		?		?		?	?	
15	TI=((use OR utili?ation OR impact OR action OR practice OR application OR influence) AND (diffusion OR dissemination OR transmission OR transfer OR translation) AND (adoption OR acquisition OR consumption OR creation OR assimilation OR integration OR absoption))	?	?		19	2	?		?		?		?		?		?		?	?	
16	TS=(evidence AND (into practice OR adoption OR use OR utili*ation OR effective practice OR impact in practice OR influence)AND (use OR utili*ation OR impact OR action OR practice OR application OR influence)NOT (medic* OR nurs*))	?	?		17760	Limit	?		?		?		?		?		?		?	?	
17	TI=(evidence AND (into practice OR adoption OR use OR utili*ation OR effective practice OR impact in practice OR influence)AND (use OR utili*ation OR impact OR action OR practice OR application OR influence))NOT TS=(medic* OR nurs* OR health OR care OR clinic*)NOT SO=(medic* OR nurs* OR health OR care OR clinic*)	?	?		562	36	?		?		?		?		?		?		?	?	
18	TI=((adoption OR acquisition OR consumption OR creation OR assimilation OR integration OR absoption)AND (diffusion OR dissemination OR transmission OR transfer OR translation))	?	?		?		188	16	?		?		?		?		?		?	?	
19	TI=evidence AND TS=(into practice OR adoption OR use OR utili*ation OR effective practice OR impact in practice OR influence) AND TS=(diffusion OR dissemination OR transmission OR transfer OR translation)	?	?		?		213	22	?		?		?		?		?		?	?	
20	TI=(evidence OR research OR knowledge) AND TS=(into practice OR adoption OR use OR utili*ation OR effective practice OR impact in practice OR influence) AND TS=(diffusion OR dissemination OR transmission OR transfer OR translation)	?	?		?		910	69	?		?		?		?		?		?	?	
21	TI=((academic* OR scholar* OR researcher*) AND (manager* OR practitioner*)) AND TS=((collaborat* OR participat* OR engage* OR involve* OR partner*)AND (use OR utili*ation OR impact OR action OR practice OR application OR influence))	?	?		19	8	?		?		?		?		?		?		?	?	
22	TI=((evidence AND (into practice OR adoption OR use OR utili*ation OR acquisition OR consumption OR assimilation OR integration OR absorption)) OR evidence AND(effective practice OR impact in practice)) AND TS=(knowledge OR research)	?	?		?		?		327	24	?		?		?		?		?	?	
23	TI=((Knowledge structure*) OR (sensemaking) OR (sense making) OR (knowing doing gap) OR (knowledge based change)) AND TS=(knowledge OR research)AND TS=(management OR organi?ation*)	?	?		?		?		?		90	22	?		?		?		?	?	
24	TI=((academic* OR scholar* OR researcher*) AND (manager* OR practitioner*) AND (collaborat* OR participat* OR engage* OR involve* OR partner*))	?	?		?		?		?		?		?		15		?		?	?	
25	TS=((academic* OR scholar* OR researcher*) AND (manager* OR practitioner*) AND (collaborat* OR participat* OR engage* OR involve* OR partner*) AND (knowledge OR research))	?	?		?		?		?		?		?		639	45	?		?	?	
26	TS=((knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*) AND (use OR utili*ation OR impact OR action OR practice OR application OR influence) AND (review OR overview OR synthesis OR summary OR synopsis))	?	43379	Limit	?		?		?		?		?		?		?		?	?	
27	TI=((knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*) AND (use OR utili*ation OR impact OR action OR practice OR application OR influence) AND (review OR overview OR synthesis OR summary OR synopsis))	?	317	27	?		?		?		?		?		?		?		?	?	
26		7	7	170072	327	170368	91	5927	122	102397	45	907	36	22009	7	1708	46	271	11	0	0

Total no of articles   473666
Potentially relevant   692
No of searches   26

Database: Science Direct

Collections: Business, Management & Accounting. Civil Engineering. Decision Sciences. Ecomics & Finance. Psychology. Social Science
Dates:From 1990
Field: Default unless otherwise specified
WILCARDS: "*" For a character, "!" truncation
Date of search: May_June 2004

Various conectors available:
OR, AND, W/, PRE/

#	Keyword	SS1		SS2		SS3		SS4		SS5		SS6		SS7		SS8		SS9		SS10	
1	relevance gap	9	3																		
2	(knowledge OR research OR knowing OR information OR idea! OR fad! OR fash!)		?	100000	Limit																
3	(use OR utili*ation OR impact OR action OR practice OR influence)		?	1997	Limit	100000	Limit														
4	(diffusion OR dissemination OR transmission OR transfer OR translation)		?	90	7	110	13	100000	Limit												
5	(adoption OR acquisition OR consumption OR creation OR assimilation OR integration OR absorpt!)		?	see 11	Limit	259	7	1129	Limit	10000	Limit										
6	(Knowledge structur!) OR (sensemaking) OR (sense making) OR (knowing doing gap) OR (knowledge based change)			78		102	4	10	1	46	5	234	12								
7	evidence W/2 (based OR "into practice" OR "effective practice" OR practice OR influence)		?	90		343	2	29	2	43	2	2	0	554	4						
8	(academic! OR scholar! OR researcher! OR universit!) AND (manag! OR practitioner! OR industry) AND (collaborat! OR participat OR engage! OR involve! OR partner!)		?	104	15	358	15	55	19	107	6	0	0	0	?	645	36				
9	(Conceptual use OR instrumental use OR strategic use)		?	55		90	5	6	2	13	0	0	0		?		?	90	5		
10	review OR overview OR synthesis OR summary OR synopsis		?	587	19	238	3		?		?		?		?		?		?		?
11	Title((knowledge OR research OR knowing OR information OR idea! OR fad! OR fash!)) AND Title-Abstr-Key((use OR utili*ation OR impact OR action OR practice OR application OR influence)AND (adoption OR acquisition OR consumption OR creation OR assimilation OR integration OR absorpt!))		?	910	14		?		?		?		?		?		?		?		?
12	Title-Abstr-Key (knowledge OR research OR knowing W/3 use OR utili*ation OR adoption)AND Title (knowledge OR research OR knowing OR information OR idea! OR fad! OR fash!)		?		?	429	21		?		?		?		?		?		?		?
13	(adoption OR acquisition OR consumption OR creation OR assimilation OR integration OR absorpt!) W/7 Column		?		?		?	401	12		?		?		?		?		?		?
14	COL AND ROW AND (knowledge OR research OR knowing OR information OR idea! OR fad! OR fash!)		?		?		?	510	22		?		?		?		?		?		?
14		9	3	103911	64	101929	70	102140	58	10209	13	236	12	554	4	645	36	90	5	0	0

Search string 1 ... Search string 2 ... Search string 3 ... Search string 4 ... Search string 5 ... Search string 6 ... Search string 7 ... Search string 8 ... Search string 9 ... Search string 10

Notes in table: Column&No3 in TI; All in TI; All in TI see also 12; see 13 &14; Column in TI; Always in TI; Column and Row in TI.

Total no of articles	319723
Potentially relevant	265
No of searches	14

Database: Emerald
Collections: All
Dates: 1990- Now
Fields: All excluding full text
WILCARDS: only "*" for truncation
Date of search:

#	Keyword	Search string 1		Search string 2		Search string 3		Search string 4		Search string 5		Search string 6		Search string 7		Search string 8		Search string 9		Search string 10	
1	relevance gap	9	2																		
2	(knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)	?		28887	13																
3	(use OR utilization OR utilisation OR impact OR action OR practice OR application OR influence)	?		405		3332															
4	(diffusion OR dissemination OR transmission OR transfer OR translation)	?		54	8	22	?	385	10												
5	(adoption OR acquisition OR consumption OR creation OR assimation OR integration OR absorpt*)	?		90	4	55	2	46	5	767	3										
6	(Knowledge structure*) OR (sensemaking) OR (sense making) OR (knowing doing gap) OR (knowledge based change)	?		9	1	29	4	6	2	77	4	33	1								
7	evidence AND ("into practice" OR "effective practice")	?		0	0	0	?	0	?	584	4	0	?	0	?						
8	(academic* OR scholar* OR researcher* OR universit*) AND (manager* OR practitioner* OR industry) AND (collaborat* OR participat OR engage* OR involve* OR partner*)	?		158	7	131	4	10	0	33	2	3	0	?	?	261	5				
9	(Conceptual use OR instrumental use OR strategic use)	?		103	0	38	2	14	2	82	2	0	?	?	?	?	?	21	0		
10	review OR overview OR synthesis OR summary OR synopsis	?		143	5	57	3	7	0	?	?	?	?	?	?	?	?	?	?	?	?
10		9	2	29849	38	3664	16	468	19	1543	15	36	1	0	0	261	5	21	0	0	0

Total no of articles: 35851
Potentially relevant: 96
No of searches: 10

Database:ERIC, Psyclit and Sociological Abstracts
Collections:ERIC /Psyclit /Sociological abstract - Journals only
Dates:from 1990
Field:all unless otherwise specified
WILCARDS: "?" For a character, "*" truncation or multi-character
Date of search:

#	Keyword	Search string 1		Search string 2		Search string 3		Search string 4		Search string 5		Search string 6		Search string 7		Search string 8		Search string 9		Search string 10	
1	*relevance gap*	7	3																		
2	*(knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)*	?		>10000	Limit																
3	*(use OR utili?ation OR impact OR action OR practice OR application OR influence)*	?		1989/3163/718	Limit	>10000	Limit														
4	*(diffusion OR dissemination OR transmission OR transfer OR translation)*	?		74/193/46	9	71/164/43	5	>2000	see 13												
5	*(adoption OR acquisition OR consumption OR creation OR assimation OR integration OR absorpt*)*	?		216/586/57	33	167/465/70	12	32/81/14	7	>10000	see14										
6	*(Knowledge structure*) OR (sensemaking) OR (sense making) OR (knowing doing gap) OR (knowledge based change)*	?		29/52/8	4	15/31/5	1	1/13/6	5	2/16/1	2	100/789/74	20								
7	*evidence AND ("into practice" OR "effective practice" OR practice OR influence)*	?		37/298/47	12	48/238/14	2	5/154/26	5	4/79/12	4		?	>2000	see15						
8	*(academic* OR scholar* OR researcher* OR universit*) AND (manager* OR practitioner* OR industry) AND (collaborat* OR participat OR engage* OR involve* OR partner*)*	?		49/65/28	10	01/01/2000	1	10/20/10	4		?		?	0/85/1	3	232/118/31	23				
9	*(Conceptual use OR instrumental use OR strategic use)*	?		5/24/14	0	2/14/6	2	0/0/0	Limit	0/4/3	0	0/0/0	Limit		?		?	40/231/63	4		
10	*review OR overview OR synthesis OR summary OR synopsis*	?		583/1140/197	see 12		?		?		?		?		?		?		?		?
11	TI=((use OR utili?ation OR impact OR action OR practice OR application OR influence)AND (knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)) AND AB=(diffusion OR dissemination OR transmission OR transfer OR translation)	?		51/134/34	25		?		?		?		?		?		?		?		?
12	TI=((knowledge OR research OR knowing OR information OR idea* OR fad* OR fash*)AND(review OR overview OR synthesis OR summary)AND (use OR utili?ation OR impact OR action OR practice OR application OR influence OR diffusion OR dissemination OR transmission OR transfer OR adoption OR acquisition OR consumption OR creation OR assimation))	?		57/104/13	9		?		?		?		?		?		?		?		?
13	TI=(diffusion OR dissemination)	?			?		?	82/318/199	32	80/331/124	19		?		?		?		?		?
14	TI=(adoption) AND NOT AB=child*	?			?		?		?		?		?		?		?		?		?
15	AB= evidence NEAR ("into practice" OR "effective practice" OR implementation)	?			?		?		?		?		?	17/101/19	1		?		?		?
15		7	3	0	102	36526	23	0	53	0	25	0	20	0	4	0	23	0	4	0	0

Total no of articles   36533
Potentially relevant   257
No of searches   15

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Appendix A2. Systematic Review: Descriptive analysis of the literature

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
1	(Cohen & Levinthal, 1990)	Absorptive Capacity: a New Perspective on Learning and Innovation	Administrative Science Quarterly	Recognition of the value of external knowledge, knowledge assimilation, knowledge application. (Dep. vb. R&D intensity is measured as the R&D expenditures as a percentage of business unit sales and transfers)	Not specified. Predictions are tested in the context of R&D intensity	To develop the concept of absorptive capacity, developing a model of firm investment in R&D that contributes to AC.	This seminal paper introduces the concept of absorptive capacity and sets an starting point for the development of the concept. Firstly prior related knowledge coupled with intensity and effort will facilitate the recognition and assimilation of knowledge. The structure of communication between the external environment and the organization as well as among the subunits are critical to understand firm's AC.	AC	QT. Yes	Private	USA	Manufacturing	Survey in 151 different lines of business (over the period 1975-1977). Ordinary least squares, generalized least squeares and Tobit	1719 business units (from 318 firms in 151 lines of business)
2	(Dodgson, 1993)	Organizational Learning - a Review of Some Literatures	Organization Studies	Organizational learning (see also process)	Intra-organization. Organizational Learning	To conduct a review of the topic and draw conclusions about the state of the art in the field	The various literatures on OL are organized into three main areas: first, the goals of organizational learning; second, the learning processes in organizations; and third, the ways in which organizational learning may be facilitated and impeded.	Organizational learning	T. Yes	NA NA	UK	NA	NA	NA
3	(Inkpen and Dinur, 1998)	Knowledge management processes and international joint ventures	Organization Science	Interpreting and sensemaking (individual level), integrating (at the group level) and integration and institutionalizing (organizational level)	Inter-organizational business related (IJV)	To explore how firms access and exploit alliance-based knowledge in international joint ventures, particularly (1) the processes that JV use to gain access to knowledge, (2) the types of knowledge associated with the different knowledge management processes and (3) the relationship between organizational levels, knowledge types and the transfer of knowledge.	(1) & (2) Knowledge management processes (and the types of knowledge associated with the different knowledge processes) were: technology sharing (explicit/ objectified), alliance-parent interaction (explicit/objectified), personnel transfers (tacit/collective and tacit/conscious) and strategic integration (explicit/ objectified, tacit/collective and tacit/conscious). In relation to organizational levels involved, technonology sharing, involved primarily groups and organizations, JV-alliance interactions involved groups, personenel transfer chiefly individuals, and strategic integration involved mainly the group organization levels. Overall, it is claimed that the greater the tacitness the more likely individuals will be the primary transfer agents. Also that extreme focus on explicit knowledge may jeopardise tacit knowledge-based learning, and finally, the more successful the transfer of tacit knowledge, the better individual and strategic interactions.	RBV & Knowledge creation	QL. Yes	American-Japanese joint ventures	USA & Japan	Automotive	Case study	5
4	(Gilbert & Cordey-Hayes, 1996)	Understanding the process of knowledge transfer to achieve successful technological innovation	Technovation	(1) acquisition, (2) communication, (3) application, (4) acceptance and (5) assimilation (incorporates cumulative learning).	Intra-organizational knowledge transfer	To develop a model for understanding the processes of learning and knowledge transfer and the activities and behaviours that may lead to successful introduction of technological change.	The paper identifies 6 stages which follow the processes of knowledge as it may be transferred within an organization to lead to the development of a set of routines: (1) acquisition, (2) communication, (3) application, (4) acceptance and (5) assimilation. Case study data reveals that technology change can be succesfully achieved by reaching acceptance rather than assimilation, but offers no evidente of whether assimilation is better at acceptance than at assimilation.	Knowledge transfer	QL. Yes	Private	UK	Banking	Case study and interviews	1 organization
5	(Jensen, Szulanski et al., 2003)	Templates and the effectiveness of knowledge transfer	Academy of Managment Annal Conference, =1-6 August. Seattle	Knowledge transfer (inter-companies).Effectiveness of implementation was measured by quality assesment programs and recipient unit performance.	Intra-organizational business-related	To explore the extent to which templates can contribute to knowledge transfer effectiveness	The use of original succesful templates are useful for knowledge transfer due to the fact that leveraging knowledge assets through replication involved the reproduction of knowledge from the source site.	Knowledge transfer	QL. Yes	Private	USA	High tech manufacturing (Rank Xerox)	Interviews, observation, documentation, survey, and archival data	1 firm, 3 transfers of sales & marketing practices

Appendix A2. Systematic Review: Descriptive analysis of the literature

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
1	(Cohen & Levinthal, 1990)	. + Shared language and symbols between the source and recipient and among sub-units.	. + Intensity and effort (processing and associations) will increase retrieval as to develop an effective absorptive capacity it is insufficient merely to expose an individual briefly to the relevant prior knowledge. + Specialized actors that stand at the interface between the firm and the external environment. + Ease of internal communication processes. + Balance between inward and outward looking ACs. + Awareness of where complementary expertise resides within and outside the firm. + Redundancy in expertise. - Lack of investment in AC can jeopardise subsequent knowldge assimilation	. + Prior related knowledge such as basic skills, shared language, recent scientific or technological developments (can be gathered through own R&D, manufacturing operations & production experience, technical training). + Diverse (as well as overlap) knowledge plays an important role in particular when there is uncertainty about the knowledge domains from which useful information may emerge. - Tacitness of knowledge and organizational routines.	NE	The development of AC is domain specific (cumulative) and path-dependent (due to its effects in expectation formation). + Incentives to learn (based on demand, approapriability and opportunity conditions) will affect R&D spending mediated by the firm's AC. + Easy of learning from the environment (complexity of knowledge, degree to which this knowledge is targeted to the firm's needs, pace of advance in the field, tacitness).
2	(Dodgson, 1993)	The greater the uncertainty of the environment, the greater the need for learning. Key to foster learning is the coordination arrangements of the organization thus orgs can be seen as coordinated learning institutions where structure defines the way in which learning processes interact. Strategy influences the creation of organizational structures and cultures	.-Constrains: Individual's bounded rationality (ability to interpret complex reality). + Facilitators are boundary spanning and gatekeepers. OL is facilitated by incentive systems that make conflicting and heterogeneus learning compatible. Trust facilitates learning. Resources devoted to learning must be compared against opportunity costs. - Barriers for learning are identifyed as inhibitory loops that are self-reinforcing cycles in which errors in actions provoke individuals to behaviours that reinforce those errors	NE	Acquision of declarative knowledge, cognitive strategies (perceiving, encoding, retrieving and thinking). Generative vs. adaptative learning (Senge). Single-loop learning, double loop (involves modification of underlying norms, policies and objectives), Deutero-learning (reflect of previous context of learning, discovery of facilitators and inhibitors, identification of new strategies for learning, evaluation of these and generalizations). Unlerning is also a significant process to enable learning.	OL is defined defined as the ways firms build, supplement and organize knowledge and routines around their activities and within their cultures, and adapt and develop organizational efficiency by improving the use of the broad skills of their workforces
3	(Inkpen and Dinur, 1998)	NE	NE	.- Degree of tacitness in the absence of individual interactions	.- Over emphasis on explicit knowledge as opposed to tacit knowledge transfer	NE
4	(Gilbert & Cordey-Hayes, 1996)	NE	.+ Recognition that learning and continuous improvements are essential processes for change	.+ Acceptability: once knowledge has been applied, before it can be assimilated into the core routines it must be found to be acceptable to the individuals.	NE	NE
5	(Jensen, Szulanski et al., 2003)	. + Templates enhance knowledge transfer by serving as referents (model to copy or adapt) or persuaders (demonstrates results),	NE	NE	.+ Templates (defined as the critical aspects of the sucessful routine, that provides the details and nuances of how the work gets done, in what sequence and how the varios subroutines are interconnected) facitilitate knowledge transfer.	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
6	(Matsuo & Easterby-Smith, 2003)	Knowledge and Knowing in Consulting Departments: A Qualitative Study of Japanese IT Firms	British Academy of Management annual conference. 15-17 September 2003. Harrogate	Knowledge acquisition, knowledge sharing and knowledge integration or institutionalization.	Intra-organizational business related	To investigate the interaction between knowledge and knowing in consulting departments of Japanese IT firms.	The paper highlights an interesting paradox: the more knowledge sharing is promoted the less members learn by experience. So knowledge sharing can both facilitate and inhibit knowing. To balance knowledge and knowing, the linkage between knowledge conversion, knowledge evaluation and experiential learning is crucial. The contribution of this study to the previous research is to find that knowledge evaluation (Skill assessment, certification of manager and incentive for disclosure) and knowledge conversion (know-how is transformed into methodologies that promote efficiency of business operations) may facilitate the interplay between knowledge transfer and knowing, which improve the quality of experiential learning and promote acquisition of tacit knowledge or skills over a short time.	Knowledge sharing & transfer	QL. Yes	Private	Japan	IT	Interviews, grounded approach	6 firms, 24 interviews
7	(Eisenhardt & Santos, 2002)	Knowledge-Based View: A New Theory of Strategy? in A. Pettigrew, H. Thomas and R. Whittington	Handbook of strategy and management	Knowledge sourcing, knowledge transfer and integration	NE	The chapter aims to answer the question whether the knowledge-based view of the firm can be considered an established theory of strategy.	The chapter review the theoretical foundations of the KBV in particular Organizational Learning and Dynamic Capabilities. It then summarizes existing empirical research and groups it into knowledge sourcing, internal knowledge tranfer and external knowledge transfer and knowledge integration. It concludes by saying that so far the KBV cannot be considered a theory of strategy but a specific case of the RBV, though recognizes the value of existing research in informing theory-building pointing at a pluralistic understanding of knowledge, and a view of organizations as complex adaptive systems, where meaning is socially constructed through ongoing activities of semi-autonomous groups.	RBV	T. Yes	NA NA	USA	NA NA	NA NA	NA NA
8	(Hansen, 2002)	Knowledge Networks: Explaining Effective Knowledge Sharing in Multiunit Companies	Organization Science	Knowledge acquisition, knowledge sharing	Intra-organizational (inter-unit) technical knowledge in NPD	To explore why some business units are able to benefit from knowledge residing in other parts of the company while others are not by understanding effective interunit knowledge sharing	Results show that project teams obtained more existing knowledge from other units and completed their projects faster to the extent that they had short interunit network paths to units that possessed related knowledge. In contrast, neither network connections nor extent of related knowledge alone explained the amount of knowledge obtained and project completion time. The results also showed a contingent effect of having direct interunit relations in knowledge networks: While established direct relations mitigated problems of transferring noncodified knowledge, they were harmful when the knowledge to be transferred was codified, because they were less needed but still involved maintenance costs	Social network and product innovation	QT & QL. Yes	Private multinational	USA	Electronics & computing	Archival, survey and inteview data (R&D and project managers). Descriptive statistics, correlation and geodesic (social network) analysis.	1 firm, 41 divisions, 120 new product development projects (85%)
9	(Martin & Salomon, 2003)	Knowledge transfer capacity and its implications for the theory of the multinational corporation	Journal of International Business Studies	Knowledge transfer and knowledge acquisition	Intra-organizational (MNC)	To describe how knowledge tacitness affects the relative suitability of archetypal entry modes (exporting, licensing, establishing an alliance, and wholly owned entry) and to examine and develop conceptually knowledge transfer capacity.	Relevant to this research are the conceptualizations of SOURCE TRANSFER CAPACITY (STC) and RECIPIENT TRANSFER CAPACITY (RTC). STC is the ability of a firm to articulate uses of its own knowledge, assess the needs and capabilities of the potential recipient thereof, and transmit knowledge so that it can be put to use in another location. RTC is transferee's ability to assimilate and retain knowledge from a willing source (as opposed to AC that pertains to the ability to capture spillovers from any source).	KBV & theory of the MNC	T. Yes	NA	USA	NA	NA	NA
10	(Wagner, 2003)	Learning and knowledge transfer in partnering: an empirical case study	Journal of Knowledge Management	Joint knowledge creation	Inter-organization knowledge transfer (partnering) business-related knowledge	To capture how two organisations involved in a partnering project learned and altered with the passage of time, bringing into focus the complex dynamics of a change process. The paper describes the continuous learning and strategic redefinition within this alliance.	3 types of capabilities are created though the partnering process: Competitive capabilities (eg. knowledge of industry, planning routines, information flows), knowldge-based capabilities (eg. joint problem solving, reduced uncertainty...) and cultural capabilities (eg. shared mental models). Inter-organizational teams were the mechanisms by which the knowledge was transferred.	Resource based view	QL. Yes	Private	UK	Manufacturing	Exploratory case study: observation, document analysis, interviews & field notes	1

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
6	(Matsuo & Easterby-Smith, 2003)	. + Motivation of the source and user and relationship among them	.+ Knowledge sharing is facilitated by intrinsic motivation and high levels of trust, perception of rewards, geographic location.	.+ Value, - tacitness, - causal ambiguity	Tranmission channels influence the effectiveness of KT	
7	(Eisenhardt & Santos, 2002)	(1) A wide portfolio of external connexions leads to more innovative outcomes. (2) Overall the literature on external KT emphasises similarities (in the knowledge bases, structures, R&D, culture & strategy) to ease KT.	(1) There is a subtle interplay between knowledge and the structures through which knowledge flows. These structures may well impede or facilitate (specially loosely linked) flows. (2) The role of incentives in enhancing motivation to share KT is unclear, and it is suggested that incentives improve knowledge transfer by increasing motivation when the knowledge is simple, but when complex, relational, organizational structures and cultural norms are more effective motivators to transfer.	(1) The review indicates livergence on the meaning of knowledge between the theoretical and the empirical literatures. The former conceptualizes knowledge in terms of types of knowing, emergence and identity. The latter focuses on knowledge as a resource. (2) Characteristics of knowledge such as tacitness, complexity and ambiguity afect both knowledge transfers within and across organizations.	(1) The studies on knowledge integration highlight the importance of concrete and tangible expressions of knowledge to overcome the potential barriers of different modes of knowing, and the varied nature of knowledge. (3) Integrative mechanisms (meetings, personal interaction) were found useful in overcoming the challenges of transferring tacit and complex knowledge (both intra and inter organizational), thus the more complex the knowledge the more critical the interaction becomes	
8	(Hansen, 2002)	. + The shorter a team's path lengths in the knowledge network, the more knowledge obtained from other business units by the team and the shorter the project completion.	. + When knowledge is not codified, the number of direct relations mitigates problems of transferring knowledge. However, these direct relations meant longer project completion time when knowledge is codified	see user	NE	NE
9	(Martin & Salomon, 2003)	RCT comprises + Identifcation of potential uses of its knowledge and the conditions under which it can be effectively used. + Determine how ready a recipient is to access recipient's strengths and weaknesses in the assimilation and use of the knowledge	RTC entails spreading the knowledge within the recipient organization and motivating and monitoring its continued use	SCT is also related (+) to the ability to act as a proficient sender, transmitting the underlying information in proper form, duly arrayed and timed, and targeted to the proper recipients within the transferee organization	Related to mode of entry in international alliances	NE
10	(Wagner, 2003)	NE	NE	NE	.+ Close relationships, + co-operation with the partner, + interactions that stimulate teamwork and communities of practice	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
11	(Beech, MacIntosh et al., 2002)	Exploring Constraints on Developing Knowledge: On the Need for Conflict	Management Learning	Knowledge development (creation)	Intra-unit (project meeting)	To explore the conditions that facilitate knowledge creation by examining conditions which fail to facilitate the development of knowledge through a multi theoretical perspective (psichodynamics, social construction and complexity theory) in a project, where there was an intention to develop knowledge.	The paper argues about the need for conflict in organizational settings where new knowledge (innovation & NPD) is supposed to be being developed. In particular it is found that the structure of a meeting can prevent creative conflict, rules prevent a system from being adaptive and social construction that emphasise hierarchy may discurage dissention, suggesting alternatives and foster compliance without commitment.	psichodynamics, social construction and complexity theory	QL. Yes	Private	UK	High technology	Interviews, observation of meetings, informal contacts, secondary data, etc.	1 meeting in an organization
12	(Latham & Latham, 2003)	Facilitators and inhibitors of the transfer of knowledge between scientists and practitioners in human resource management	European Journal of Work and Organizational Psychology	Transfer of learning	Transfer of industrial-organizational psychology knowledge	To suggest prescriptive ways to generate reciprocal learning between the academic and the practice communities	The 8 methods proposed are: 1 Set mutually interdependent goals. 2. Stop, look, and listen; be seen as a team player. 3. 3. Find a champion who is an influential member in the other solitude. 4. Become bilingual. 5. Measure the desired behaviour. 6. Educate the other solitude. 7. Fund collaborative problem solving. 8. Create heterogeneous virtual teams.	Relevance gap	T. Yes	NA NA	Canada	NA NA	NA NA	NA NA
13	(Eriksson & Chetty, 2003)	The effect of experience and absorptive capacity on foreign market knowledge	International Business Review	Knowledge absorption (measured by asking respondents about the lack of knowledge of certain factors as an obstacle in a selected ongoing foreign business assignment and by asking about the usefulness of past experiences in carrying out this assignment. Firms which can apply their experiences have acquired absorptive capacity.	Foreign market knowledge (logistics, products, production, development, interpersonal factors, and financial matters)	The purpose of this paper is therefore to develop and empirically test a model of how depth and diversity of experience affect absorptive capacity	Absorptive capacity is divided into two constructs. First, it customer network AC and dyadic AC. The more of customer network AC the more likely it is to perceive that the firm lacks foreign market knowledge. Conversely more dyadic AC reduces this awareness.	AC	QT. Yes	Private	Sweden	Various sectors. Companies which exported more than 10% sales	Survey, LISREL	152 (21%)
14	(Tsoukas, 1996)	The Firm as a Distributed Knowledge System: a Constructionist Approach	Strategic Management Journal	Creation of knowledge through utilization	Primarily intraorganizational	The purpose of this paper is to develop further develop the insight that firms are distributed knowledge systems	Six key arguments are put forward in the paper. 1) the resources of a firm are neither given or discovered but created. The services rendered by the resources are important to a firm (not the resources themselves), and services depend on how resources are viewed, which is a function of the knowledge applied to them. Carriers of that knowledge are the firm's routines, members, etc. implying that a firm is a knowledge system. 2) The problem firms face is the utilization of knowledge which is not known by a single mind. 3) Firms are distributed knowledge systems because kw is shared, and indeterminate. 4) Knowledge is derived from the context in which a firm operates and continually reconstituted through the activities undertaken by a within a firm which are not self contained. 5) Social practices consist of role-related normative expectations -controlled by the firm-, dispositions -derived from past experience- and interactive situations -unknow a priori-, so firms knowledge is EMERGENT not possessed by anyone individual. 6) normative expectations, dispositions, and interactive situations are inevitably in tension, closed	RBV	T. Yes	NA	Cyprus	NA	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
11	(Beech, MacIntosh et al., 2002)	NE	.- Behaviours that focus on ego-defence, the maintenance of stablished roles and identities and order-generating rules.	Social & dynamic view of knowledge	.- Structure of interactions that serve to avoid creative conflict (threat to egos). - Process that passifies active roles. - Rules that encourage stability and not adaptation. - Facilitation that legitimise under-involvement and prevents disruption.	NE
12	(Latham & Latham, 2003)	. - Mutual distrust based on lack of business experience, and the pursuit of self-serving interests. + Getting engaged with the organization will make it easyer to fully understand business issues	. + A champion within the business who appreciates empirical and sound research. + Stablish incentives and measurement systems to foster the interaction.	. + Use a language that becomes an effective vehicle for communication (differentiate between 'quality' and 'precision' and 'hard' and 'abstruse')	. + Strenghthen the communication between the two groups by exposing managers to theoretical issues and academics to practical problems. + Create virtual teams	
13	(Eriksson & Chetty, 2003)	NE	. + Diversity of experience acquired from doing business in many countries increase dyadic AC (and less customer network AC). + Depth of experience acquired with a specific customer and prior assingments increase customer AC	NE	NE	NE
14	(Tsoukas, 1996)	NE	NE	NE	NE	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
15	(Nonaka, 1994)	A Dynamic Theory of Organizational Knowledge Creation	Organization Science	Knowledge creation (socialization, externalization, combination, internalization)	Intra-organizational knowledge creation	To present a paradigm and model for managing the dynamic aspects of organizational knowledge creating processes	Nonaka (1994) proposes that "organizational knowledge is created through a continuous dialogue betvyeen tacit and explicit knowledge" and that "new knowledge is developed by individuals" while organizations "articulate and amplify that knowledge" (p. 14). He proposes that knowledge creation is a more dynamic process than organizational leaming. His model focuses on the individual as the begmning of knowledge creation in organizations yet he maintains that "social interaction between individuals, groups and organizations are fundamental to organizational knowledge creation"	Knowledge creation	T. Yes	NA	Japan	NA	NA NA	NA NA
16	(Spender, 1996)	Making Knowledge the Basis of a Dynamic Theory of the Firm	Strategic Management Journal	NE	NE	To provide a review of the philosophical, epistemological, and ontological roots of knowledge.	A knowledge-based theory looks at the firm as a dynamic, evolving, quasi autonomous system of knowledge production and application. In order to do so, a clear statetement of the epistemology that one follows to define it is needed. In this sense, knowledge is seen more as a process than as an asset (or resource). Different types of knowledge are defined based on the explicit/tacit and individual/social dimensions: conscious, automatic, objectified, collective. To help define the firm as a knowledge-based actitvity system, 4 heuristics are posed: 1) interpretive flexibility (to maintain the system active), 2) boundary management (manage the relationship the firm is stablishing to beyond the status quo), 3) identification of institutional influences to control boundary management and 4) identification of internal knowledge processes	RBV & KBV	T. Yes	NA	USA	NA	NA	NA
17	(Minbaeva, Pedersen et al., 2003)	MNC knowledge transfer, subsidiary absorptive capacity, and HRM	Journal of International Business Studies	Knowledge transfer (level of knowledge utilization of the recipients assuming both acquisition and use of new knowledge)	Intra-organizational (MNC) transfer of HR practices	To investigate the relationship between MNC subsidiary human resource management (HRM) practices, absorptive capacity, and knowledge transfer	The most important finding of the study is that both aspects of absorptive capacity, ability and motivation need to be present in order to facilitate the absorption of knowledge. Employee ability or motivation alone does not lead to knowledge transfer. Absorptive capacity is conceptualised as an endogenous part of the model, where organizational practices may contribute to its development.	AC	QT. Yes	Private	USA, Russia & Finland	Various (electronics, metal, chemicals, financial services...)	Survey. Correlation and regression analyses	168 (55 Finland, 81 Russia, 32 USA)
18	(Beyer & Trice, 1982)	The utilization process: a conceptual framework and synthesis of empirical findings	Administrative Science Quarterly	Knowledge utilization is divided into two components, adoption (sensing - Search- Affective Reactions- Selection- Adoption) and implementation (Diffusion - Receptivity - Use - Evaluation- Commitment - Institutionalization).	NE	To review 27 published empirical studies concerned with either the utilization of organizational research or social science research that included some organizational variables and to provide a conceptual framework to be used in studying the phenomenon of utilization.	CONCLUSIONS (1).It is unrealistic to expect many instances of complete, direct utilization. The predominant use of organizational research probably occurs through gradual seepages into organizations of new ideas, metaphors, and rationales for explaining human behavior. (2) Inevitably, people use or distort ideas derived from organizational research to pursue their own advantage. (3) The prevailing opinion in the field seems to be that organizational research is seldom utilized. RECOMENDATIONS (I) In research on utilization, researchers should employ methods that can uncover subtle as well as obvious cases of research use. (II) change is so often resisted or otherwise impeded, utilization is often incomplete, (III) In research on utilization, researchers shoutd employ methods that discriminate between partial and complete use by collecting data on a range of utilizing behaviors: they will then be able to investigate factors associated with greater or less utilization and with different patterns of incomplete utilization. (IV) If researchers wish to achieve greater utization, they must recognize that more than adoption is invol	Knowledgte utilization	T. Yes	NA	USA	NA Theoretical	NA Various	NA NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
15	(Nonaka, 1994)	.+ The commitment of the individuals is critical for knowledge creation, which in turn is induced by intention (how individuals approach the world and make sense of their environment), autonomy (gives freedom to absorb and is a driving force for metaphor creation) and fluctuation (of the environment generates new patters of interactions and thus potential for new knowledge)	. + The quality of individual's tacit knowledge is influenced by "variety" of indivial's experience and "the knowledge of experience" (the embodiment of knowledge through a deep personal commitment to body experience. Body and mind brought together). + Self organizing teams are advised to increase the sharing of tacit knowledge based on interdependence, learning to learn, requisite variety, minimum critical specification and redundancy of functions and information (existence of information more than the specific information required inmediately) and creative chaos (processes triggered as a result of a crisis) .	. + Knowledge created within the organization needs to be "justified" to determine the extent to which that knowledge is worthwile for the organization. Beyond rational aspects such as cost, profit margins, and contribution to firm's development, knowledge may be judged on the basis of adventure, romanticism and aesthetics.	Knowledge is created through the interplay of tacit and explicit knowledge via socialization (observation, imitation and practice), externalization, combination, internalization.	NE
16	(Spender, 1996)					
17	(Minbaeva, Pedersen et al., 2003)	NE	. + The interaction between employees' ability and motivation will increase the level of AC and thus the knowledge transfer to the subsidiary	NE	. + HRM practices are seen as mechanisms that can help the organization's	The paper treats the development of AC as an endogenous part of the model
18	(Beyer & Trice, 1982)	. + Timing the pace of social inquiry with the needs of users. - Cultural differences between user and source. + Using channels that are likely to be read by potential audiences.	.+ Traslation of findings so internal diffusion processes are facilitated. + Enhanced participation of users.	Rearch can be used in 3 different ways: instrumental, conceptual and symbolic. + Language that facilitate communication and uptake, with clear-cut messages and concreness. + Research that challenges the status quo if that change is favourable to the user. - Evaluation research that is critical to what one has been doing. + Research content that is relevant to user's needs. + Manipulability of research variables. + Research that serves immediate interests. + Profitability and applicability (rather than empirical validity and logical precision). +/- Quality. It is unclear the extent to which quality is important to users in research utilization.	.+ Linking the information process that occurs in user systems and research-production systems such as OD specialists, internal researchers, consultants... + Promoting linking roles such as "applied social scientists". + Direct contact between researchers and managers is most effective to achieve utilization.	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
19	(Lenox & King, 2004)	Prospects for Developing Absorptive Capacity Through Internal Information Provision	Strategic Management Journal	Adoption of practice (measured as the total count of pollution-reducing product or process modifications in a given year as indicated in the Source Reduction Activity (SRA) fields of the Toxic Release Inventory.)	Intra-organizational provision of info about pollution prevention practices.	To explore the degree to which managers can develop absorptive capacity by directly providing information to agents in the organization that might potentially adopt a new practice	Managers may be able to develop absorptive capacity through internal information provision, this ability is contingent on the distribution of related experience within the firm. Results confirm that the more central managers provide information about a practice, the greater a firm's adoption of that practice and the greater the number of previous adopters of a practice, the lower the effectiveness of central information provision as a means to encourage adoption of that practice. Information provision is most usefill when an organizational agent has little infonnation that directly relates to a new practice, but a great deal of information that is moderately related to this practice.	AC	QT. Yes	Private	USA	IT & Communicatio ns manufacturing	Archival data and survey. Dependent variable: the adoption of pollution prevention practice. Independent variables information provision, cumulative adoption, past events, related practices, etc.	82 firms (26%) operating 494 (48%) facilities
20	(Rynes, Bartunek et al., 2001)	Across the great divide: knowledge creation and transfer between practitioners and academics	Academy of Management Journal	Knowledge creation and diffussion as critical to knowledge transfer. Knowledge adoption	Interorganizational. Management research	To summarise the empirical contributions of the papers published in AMJ vol. 44 no. 2.	Paucity of empirical work in the organisational sciences examining knowledge transfer between academics and practitioners. Criticality of the relational aspects to make knowledge transfer happen. Adoption of new knowledge is a slow process even under highly favourable circumstances, so communication of research that enhances interactions and favours face to face communications are recommended. Problems of diffusing research exist, but also difficulty of science to avoid lagging behind practice. Recommendations about how organisational scientists and practitioners might develop a strategy to increase the pace and quality of knowledge creation and dissemination thorough collaborative efforts are offered: manage the natural tensions inherent in academic-practitioner interactions, professional associations to facilitate academics-practitioners connections, openness of journal editors to take on contributions that reflect knowledge creation processes other than the combination of explicit knowledge.	Theoretical	T. Yes	Academic institutions & industry	USA	Academic institutions	NA	NA
21	(Boland, Singh et al., 2001)	Knowledge representations and knowledge tranfer	Academy of Management Journal	Knowledge representations, induce of schema and levels in decision making	Texts describing managerially relevant situations	To investigate whether different ways of representing knowledge, matter in managerial decision making	Two hypothesis are examined. H1 The levels of managerial decision-maldng outcomes on complex tasks will be higher after managers' exposure to abstract knowledge than after their exposure to contextualized knowledge. H2. The levels of managerial decision-maldng outcomes on complex tasks will be higher after managers' exposure to figurative knowledge objects than after their exposure to literal knowledge. Both hypothesis received mixed support, pointing at the need to ultimately have an impact of interpretive knowledge on different aspects of managerial decisions.	Cognition and learning theories	QT & QL. Yes	Private	USA	University. Graduate students	Before & after experiment	34 responses (65%) participants in graduate-level manageme nt courses
22	(Szulanski & Jensen, 2004)	Overcoming stickiness: An empirical investigation of the role of the template in the replication of organizational routines	Managerial and Decision Economics	Replication of practices, knowledge transfer.	Intra firm organizational practices (marketing related)	To investigate the importance of templates in transfers of knowledge and the replication of organizational routines	Three initiatives, called Wave I, Wave II, and Telesales were implemented with low stickiness, high stickiness, and low stickiness respectively. While several factors contributed to those results, it is found that the most important one was the choice of whether or not to rely on a situated working example, or template. While Wave I and the Telesales phase relied on an existing, tangible model that served as a benchmark for replication, Wave II relied instead on a conceptual integration of smaller sales practices scattered throughout the corporation.	AC	QL. Yes	Private	Europ e	Manufacturing	Quasi-experiment, longitudinal case study. Observation of naturally-ocurring effects	1 firm

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
19	(Lenox & King, 2004)	. + The more central managers provide information about a practice, the greater a firm's adoption of that practice.	. - The greater the number of previous adopters of a practice, the lower the effectiveness of central information provision as a means to encourage adoption of that practice.	. + The greater number of related past events experienced by potential adopters, the lower the effectiveness of central information provision as a means to encourage adoption of a practice.	NE	NE
20	(Rynes, Bartunek et al., 2001)	.+ Good social relations (reduce value conflicts). + Facilitation in interpreting data and results to motivate and enable to use knowledge.	.+ Participation of user (interpretation, fast prototyping).	.+ Research usefulness.	.+ Increased interaction and face to face contacts. - Dissemination channels that are not preferred by user (eg. academic journals for practitioners). - The use of academic style (declaritive, objective knowledge) in practitioner settings.	NE
21	(Boland, Singh et al., 2001)	NE	NE	see findings	NE	NE
22	(Szulanski & Jensen, 2004)	NE	NE	NE	. + The use of a template in a replication effort reduces stickiness. Replicating a composite of routines that is not combined into a single working example increases stickiness.	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
23	(Tsai, 2001)	Knowledge transfer in intraorganizatio nal networks: Effects of network position and absorptive capacity on business unit innovation and performance	Academy of Management Journal	Access to knowledge (acquisition), internal distribution. Innovation is measured by no. of products launched in a given year divided by no. targets products to be launched. AC is measured as R&D expenditure/sales	Intra-organizational, inter-unit (business related knowledge)	To explore the relationship between absorptive capacity and network position in business unit innovation and performance.	Results indicate that the centrality of an organizational unit's network position is positively related to its innovation but not to its performance. The unit's absorptive capacity is positively related to both its innovation and performance. Lastly, the centrality of a unit's network position is more positively related to innovation & performance when the unit has high absorptive capacity. It is important to know how social processes within organizations affect innovation as knowledge is socially constructed and OL involves a complex social process that can be facilitated by network position.	AC and social networks	QT. Yes	Private	USA	Petrochemical and food manufacturing.	Questionnaire, archival data. Sociometric techniques to measure relational data. Hierarquical regression and further structural equivalence analysis.	120 respondents from 2 organisation s
24	(Argote & Ingram, 2000)	Knowledge transfer: A basis for competitive advantage in firms	Organization al Behavior and Human Decision Processes	Knowledge creation and transfer (defined as "the process through which one unit is affected by the experience of another)	Inter and intra-organizational knowledge (NE)	To investigate the extent to which knowledge can be considered a source of competitive advantage and to identify the kinds of knowledge that are most difficult to transfer to different contexts.	The interactions among people, tasks, and tools are the most difficult are least likely to fit the new context and hence are the most difficult to transfer.	NE	T. Yes	NA	USA	NA	NA	NA
25	(Lane & Lubatkin, 1998)	Relative absorptive capacity and interorganizatio nal learning	Strategic Management Journal	Recognition and value of new external knowledge, knowledge assimilation and knowledge utilization. Interorganzational learning (firmÆs success at interorganizational learning within the alliance measured asking the experts to evaluate how the alliance has helped the pharmaceutical firm in terms of learning new skills or capabilities and technology or research developments). AC was measured through "understanding of new knowledge" looking at publication records	Inter-organizational knowledge. Technical knowledge, skills & capabilities in biotech/pharma R&D alliances	To develop the concept of absorptive capacity into relative absorptive capacity (RAC) by using the learning dyad (student & teacher firm) and to explore the elements that influence RAC	As predicted, the similarity of the partners' basic knowledge, lower management formalization, research centralization, compensation practices, and research communities were positively related to interorganizational learning.	AC	QT. Yes	Private	USA	Biotech & pharmaceutica ls	Panel of experts and survey + public databases info. Correlation and regression analyses	31 R&D alliances, 52 responses (74%)

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
23	(Tsai, 2001)	NE	.+ the centrality of an organizational unit's network position positively affects KT measure by innovation (but not performance). + The unit's absorptive capacity is positively related to both its innovation and performance.	NE	NE	NE
24	(Argote & Ingram, 2000)	.+ Similarity between the tasks or "strategic simmilarity" is found to have positive effects on knowledge transfer	. + Knowledge transfer is more likely to occur across organizations that are embedded in a network such as franchise, chain, alliance, etc. than across independent organizations. Simmilarly nonredundancy in organization's social networks facilitates the ability to acquire knowledge and new capabilities. These weak ties facilitate KT when the knowledge to be transferred is not complex.	. + The relationship between content of knowledge and performance is mediated by knowledge's adaptability, as Kw that cannot be adapted may have negative effects on performance	Knowledge transfer manifests itself in changes in the knowledge base or in performance. The latter is difficult to see as knowledge resides in (a) individual members, roles and organizational structures, (c) the organization's standard operating procedures and practices, (d) its culture, and (e) the physical structure of the workplace	NE
25	(Lane & Lubatkin, 1998)	. + The similarity of the partners' organizational structures, compensation practices, and research communities were positively related to interorganizational learning.	see source	. + Simmilarity in the partner's basic knowledge (general understanding of principles and techniques) is positively associated with inter-organizational learning. +/- The effects of specialized. + Simmilarity in the proportion of problems that the teacher company experiences that are also present in the student company	NE	NE

No	Ref.	Title	Journal	Knowledge and learning processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
26	(Gopalakrishnan & Santoro, 2004)	Distinguishing between knowledge transfer and technology transfer activities: the role of key organizational factors	IEEE Transactions on Engineering Management	Knowledge transfer and technology transfer. Initiation, assimilation and institutionalization. (Knowledge transfer included the following variables (a) firmÆs involvement in curriculum development; b) number of student interns hired by the firm; c) firmÆs involvement in the development and use of cooperative education programs; level of participation in jointly owned operated facllities specifically for developing and commercializing new, technologies, etc.)	Inter-organization engineering and technical knowledge	To distinguish between knowledge transfer and technology transfer study how different organizational factors affect differently knowledge transfer and technology transfer	Specifically, firms with more mechanistic structures and more stable direction-oriented cultures were associated with higher levels of knowledge transfer. Conversely, firms with more organic structures, more flexible change-oriented cultures, and more customized university policies for IPR, patent ownership, and licensing were associated with higher levels of technology transfer. The firm's trust in its university research center partner was equally important for both activities. Overall, the study points at the need for managers to combine elements of different types of structures and cultures to create organizations better able to both flexibly adapt and quickly integrate these changes.	Technology transfer	QT. Yes	Private / Public	USA	Industry-university relationships	Survey. Regression analysis	189 (48%)
27	(Agrawal, 2001)	University-to-industry knowledge transfer: literature review and unanswered questions.	International Journal of Management Reviews	Knowledge transfer from universities to industry	Inter-organizational university-industry knowledge transfer (NE)	To review studies on university industry knowledge transfer	Papers on this topic are divided into four categories. Research in the 'firm characteristics', 'university characteristics', 'geography in terms of localized spillovers' and the 'channels of knowledge transfer'.	University-industry knowledge transfer	T. Yes	NA	Canada	NA	NA	NA
28	(Cockburn & Henderson, 1998)	Absortive capacity, coauthoring behaviour, and the organization of research in drug discovery	Journal of Industrial Economics	Knowledge acquisition (AC is operationalized by the extent of collaborations with industry, measured by co-authored scientific publications)	Technical biomedical research, inter-organization	To examine the linkages between for-profit and publicly funded research in pharmaceuticals	It is found that the relationship between public and private sectors in biomedical research is of reciprocal nature, where private sector's research results are important for public sector work. The transfer of information between the two sectors may be costly and time consuming. Thus it is advised to foster the "connectedness" between private and public researchers. In particular coauthoring is correlated with private sector research productivity. The paper concludes that the linkages between private and public research must be further explored as there are multifaceted and complex interrelated organizational drivers of research productivity	NE	QT & QL. Yes	Private	USA & Japan	Pharmaceuticals	Case stories and bibliographic analysis	21 case stories of drug development and SCI citations (1980-1994)
29	(Lim, 2000)	The many faces of absortive capacity: spillovers of copper interconnect technology for semiconductor chips	MIT Working Paper 4110	Knowledge acquisition (AC is measured by R&D spending, participating research consortia, funding research, etc.)	Business-related, technical knowledge absorption	To explore how firms develop different kinds of absortive capacity.	Among others, the author points out the following mechanims for developing AC: (1) performing R&D; (2) funding research at universities, maintaining relationships with faculty, and hiring graduate students; (3) forming alliances with companies that possess a given technology; and (4) obtaining membership in research consortia. The alternative methods for building absorptive capacity are at least as important as internal R&D.	Absorptive capacity	QL. Yes	Private	USA	Semiconductor	Quantitative (data sets of patents & publications) and 24 semistructured interviews	NE

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
26	(Gopalakrishnan & Santoro, 2004)	+ The firm's trust in its university research center partner was important for both knowledge transfer and technology transfer activities	. + Mechanistic structures and more stable direction-oriented cultures had a stronger association with knowledge transfer than technology transfer. Authors argue that both stable direction and flexible change oriented cultures are necessary. + More organic structures, more flexible change-oriented cultures, and more customized university policies for IPR, patent ownership, and licensing had a stronger association with technology transfer than knowledge transfer.	NE	Two different sets of activities are defined for knowledge and technology transfer between industry and university	NE
27	(Agrawal, 2001)	University characteristics are thought to play a critical role in the nature of the trasfer, particularly the nature of the incentives universities have to patent or licence patents.	. + The higher the "connectedness" of firms to universities, the better AC. This connctedness can be facitated by location, access to venture capital or others. + Overall, investments in R&D create a capacity to assimilate and exploit new knowledge. + Beyond investments in R&D, conducting leading edge research within the firm requires recruiting the best people, rewarding researchers accoriding to publicly accepted standards and encouraging firm researcher's engagement with public scientists.	NE	Channels of Knowledge Transfer, some channels, such as publications, conferences, informal conversations, and consulting, are, overall, considered more important for knowledge transfer and also that different industries value different channels differently. Non-patent channels of knowledge transfer are economically important.	A gap is detected in the sectors that have been studied in the literature of firm characteristics: primarily biotech and pharma. What are the methods to build AC is other sectors?
28	(Cockburn & Henderson, 1998)	NE	NE	NE	. + Connectedness" between private and public researchers is correlated with private sector research productivity. Connectedness means not only read the journals, attend conferences, and being an active player in the informal network, but also be an active participant in the construction of publicly available research results (despite issues of appropribility).	NE
29	(Lim, 2000)	. + AC depends not only in R&D but also in the firm's connectedness, alone R&D is limited	.+ Science oriented research environment though useful may not be necessary. + Level of connectedness with universities and other firms.	.+ R&D is useful for capturing discipline-level knowledge and other approaches are useful for capturing domain specific.	The mechanisms used for building absorptive capacity shift over time, depending the type of knowledge companies are after.	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
30	(Zahra & George, 2002)	Absorptive capacity: A review, reconceptualization, and extension	Academy of Management Review	Knowledge ACQUISITION (identify and acquire externally generated knowledge), ASSIMILATION (analyze, process, interpret, and understand the information), TRANSFORMATION and EXPLOITATION.	NA	To clarify the the ambiguity and diversity of AC definitions, components, antecedents, and outcomes	The paper reconceptualizes AC as a dynamic capability and differentiates between potential and realized absorptive capacity. In particular AC is seen as the set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge for purposes of value creation. ACAP is viewed as a dynamic capability embedded in a firmÆs routines and processes, making it possible to analyse the stocks and flows of a firmÆs knowledge and relate these variables to the creation and sustainability of competitive advantage (p.186-188).	RBV & AC	T. Yes	NA NA	USA	NA NA	NA NA	NA NA
31	(Lin, Tan et al., 2002)	The critical factors for technology absorptive capacity	Industrial Management & Data Systems	Assimilate and apply knowledge	Not specified (implied that refers to inflows of technological knowledge)	To explore the critical factors of absorptive capacity through its impact on transfer performance	The results of the study reveal significant associations between technology absorptive capacity and the critical factors - technology diffusion channels (formal /informal), interaction mechanisms (intra-organizational/ inter-organizational), and R&D resources. Organizational cultures impact on interaction mechanisms, R&D resources, absorptive capacity and transfer performance. Overall, absorptive capacity is a critical factor for the effectiveness of the transfer performance. All of the related factors will not successfully impact a firm's performance without strong absorptive capacity	AC and technology transfer	QT & QL. Yes	Private	China	Electronics and chemical manufacturing industries	Structured questionnaires to R&D managers. Interviews.	548 firms (383 from electronics and 164 chemical) RR 20.27%
32	(Lane, Salk et al., 2001)	Absorptive capacity, learning, and performance in international joint ventures	Strategic Management Journal	Knowledge understanding, knowledge assimilation, knowledge application. Learning (measured by Likert-type responses to the question To what extent have you learned from your foreign parents (a) new technological expertise, (b) new marketing expertise, (c) product development, (d) managerial techniques, and (e) manufacturing process)	Inter-organizational (International joint venture) business-related	To explore the relationship between AC, learning and performance in IJV	Trust between an IJVÆs parents and the IJVÆs relative absorptive capacity with its foreign parent influence its ability to understand new knowledge held by foreign parents. An IJVÆs learning structures and processes influence its ability to assimilate new knowledge from those parents. The IJVÆs strategy and training competence are suggested to shape its ability to apply the assimilated knowledge. Trust and management support from foreign parents are associated with IJV performance but not learning.	AC	QT. Yes	Private	Hungary	Various (manufacturing 60% and service)	Survey and interviews protocols. Multiple regression analyses	78 Joint ventures
33	(Shariq, 1999)	How does knowledge transform as it is transferred? Speculations on the possibility of a cognitive theory of knowledgescapes	Journal of Knowledge Management	Knowledge transfer, knowledge transformation	Knowledge transfer (NE)	To answer the question How does knowledge transform as it is transferred? which is argued to be a central chanllenge in the knowledge economy	Knowledge transfer process is ultimately a human-to-human process and since this process is inherently interactive and dynamic, the knowledge, in essence, transforms while or during the very process of its transfer. Human cognition is enacted interactively and dynamically, between internal and external cognition, and in order to enact, both must be accessible within the human mind.	Cognitive theories	T. Yes	NA	USA	NA Wholly Theoretical	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
30	(Zahra & George, 2002)	NE	. + Antecents: PRIOR KNOWLEDGE & KNOWLEDGE SOURCES, including simmilarity and complementarity. EXPERIENCE: Effort expended in prior knowledge acquisition (intensity, speed, and direction).	NE	. + INNOVATION & PRODUCT DEVELOPMENT is associated with realized AC and greater flexibility in reconfiguring their resource assets and in effectively timing capability deployment at lower costs is associated with potential AC	NE
31	(Lin, Tan et al., 2002)	NE	. + Organizations with better diffusion channels, interaction mechanisms, and fc more R&D resources scored higher in their absorptive capacity. + Organizations with higher diffusion channels, technology th absorptive capacity, interaction mechanisms, and R&D resources significantly perform better in the transfer performance.	NA	NA	NA
32	(Lane, Salk et al., 2001)	. + Trust between an IJVÆs parents and the IJVÆs relative absorptive capacity with its foreign parent are suggested to influence its ability to understand new knowledge held by foreign parents and associated with performance instead of directly with learning	+ An IJVÆs learning structures and processes are proposed to influence its ability to assimilate new knowledge from those parents. + The IJVÆs strategy and training competence are suggested to shape its ability to apply the assimilated knowledge.	NE	NE	NE
33	(Shariq, 1999)	NE	. + Internal cognition (knowing of tacit, codified abstractions and artifacts by an actor in a particular situation), external cognition (embodiment of the natural and artifactual environment with which the actor is interacting). The recepient must posses internal cognition to interpret knowledge being offered.	NE	. + The interaction between the internal and the external cognition of knowledge and its temporal instantiation is the fundamental basis of the process that is at the root of the transformation of knowledge during its transfer.	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
34	(Watts Sussman & Schneier, 2003)	Informational Influence in Organizations: An Integrated Approach to Knowledge Adoption	Information Systems Research	Knowledge adoption (unit of analysis for the study is the individual e-mail message. Informants were asked to select actual e-mail messages they received that contain advice, recommendations, and suggestions for how to solve problems) , knowledge transfer	Work-related advice (non administrative) transmited by email. Intra-organizational	To investigate how knowledge workers are influenced to adopt the advice that they receive by building and testing a model of knowledge adoption	The results confirm that both the perceived argument quality and the preceived source credibility influence the perceived information usefulness. Moreover, higher levels of perceived usefulness are associated with higher levels of information adoption. In addition, the study shows that message recipients who are experts in the topic or highly involved place more importance to argument quality over source credibility. On the contrary novice recipients, or those not involved in the topic at hand consider source credibility more important. Information usefulness serves a mediating role between argument quality (beta=0.30) and source credibility (beta= 0.14) and information adoption	Knowledge & information adoption	QT & QL. Yes	Private multinationa l firm	USA	Consulting	Interviews & survey	40 interviews (18%) & 63 questionnair es (35%)
35	(Boisot, 2002)	The creation and sharing of knowledge in Chun Wei Choo and Nick Bontis (eds.)	The strategic management of intellectual capital and organizationa l knowledge	Scanning (identifying threats and opportunities in generally available but often fuzzy data and gather insights), problem solving (giving structure and coherence to such insights), abstraction (generalizing insights to new situations), diffusion (sharing newly created insights to a target population), absorption (applying the new insights) and impact (the embedding of abstract knowledge in concrete practices) .	Inter individual and intra-organizational	The purpose of this book chapter is to provide an overview and introduction of knowledge and knowledge processes	The author conceptualizes knowledge as different from data and information, arguing that whilst data is located in the world and knowledge in agents. Knowledge is also seen as a stock of dispositions to act in particular ways conditional on the receipt of external information. Learning in turn is the amount of change in these knowledge stocks. Emphasis is placed on social learning and six phases identified: scanning, problem solving, abstraction, diffusion, absorption and impact.		T. Yes	NA	Spain	NA	NA	NA
36	(Rogers, 1995)	Diffusions of innovations (3rd ed.) New York. Free Press		Diffussion of innovations	Inter-organizational. Society-level diffusion	This book is a seminal work aimed to explained, among other things, the factors that explain differences in the rate of adoption of innovations.	The main concern of the innovation diffusion research is how innovations are adopted and why innovations are adopted at different rates. Rogers states there are four main elements of diffusion - innovation, time, communication, and social system. Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 1995, p. 5). Five phases are found in the diffusion of innovations: 1. Knowledge (about the existence and potential of an innovation), 2. Persuasion (forming an attitude towards the innovation), 3.Decision (adoption or rejection), 4.Implementation (the innovation is put to use), 5.Confirmation (reinforcement for an adoption decision in sought). It is argued that adoption of an innovator is a social process in which subjective evaluations will be sought from peers, particularly at the persuasion stage. The characteristics of the innovations are essential to understand the process of diffusion.	Diffusion of innovations	T. Yes	NA	USA	NA	NA	NA
37	(Cook & Brown, 1999)	Bridging epistemologies: The generative dance between organizational knowledge and organizational knowing	Organization Science	Knowing (found in individual and group practice is seen as an aspect of our interaction with the social and physical world. Its interplay with knowledge genarates new knowledge)	NE	To explore the concept of "knowing" and its relationship with "knowledge" and point at how can these inform studies of organizational knowledge	In the paper, it is argued that knowledge is a tool of knowing, that knowing is an aspect of the interaction with the social and physical world, and that the interplay of knowledge and knowing can generate new knowledge and new ways of knowing. The generative dance between knowledge and knowing is a powerful source of organizational innovation.	Knowing	T. Yes	NA	USA	NA	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
34	(Watts Sussman & Schneier, 2003)	.+ Source credibility influences information usefulness + Source credibility is positively correlated with information adoption, particularly in novice recipients	NE	. + Perceived argument quality and the preceived source credibility influence the perceived information usefulness. Moreover, higher levels of perceived usefulness are associated with higher levels of information adoption.	NE	NE
35	(Boisot, 2002)	NE	.+ The sharing of codes, conceptual schemes. No two agents posses identical mental schemas, thus they will assimilate and accomodate new knowledge in different ways.	.+ A minimum degree of articulation of tacit knowledge.	. + Knowledge destruction facilitates knowledge creation or the acquision of new knowledge.	NE
36	(Rogers, 1995)	Opinion leaders directly affect the tipping of an innovation (a powerful way for change agents to affect the diffusion of an innovation is to affect opinion leader attitudes).	.+ Individuals make a decision to innovate, based on personal characteristics, and this diversity is what makes diffusion possible. Five categories of system member innovativeness can be identified: 1) innovators, 2) early adopters, 3) early majority, 4) late majority, and 5) laggards	. + Relative advantage - potential adopters need to see an advantage for adopting the innovation. + Compatibility - innovations need to fit in with potential adopters' current practices and values. - Complexity - innovations' ease of use will lead to more rapid adoption. + Trialability - potential adopters want the availability of "testing" before adopting. + Observability - potential adopters want to see observable results of an innovation.	NE	NE
37	(Cook & Brown, 1999)	It is argued that knowing is to interact with and honor the world using knowledge as a tool since the knowledge about the social and physical world shapes our interaction with that world (what we can know are products of ongoing concrete interaction between myself and the specifics of the social and physical context or circumstances)	Not all of what is known is captured in the 4 categories of knowledge, as knowledge is also embedded in practice. What is part of action is called "knowing" (not everything we do is explicable solely in terms of knowledge).	Paper argues that the 4 categories of knowledge inherent in the tacit/explicit and individual/group is a distinct form of knowledge: concepts (E/I), skills (T/I) , stories (E/G) and genres (T/G)	The source of new knowledge and knowing lies in the use of knowledge as a tool of knowing, within situated interaction with the social and physical world, this is called the generative dance.	

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
38	(van den Bosch, Volberda et al., 1999)	Coevolution of firm absorptive capacity and knowledge environment: Organizational forms and combinative capabilities	Organization Science	Evaluation, acquisition, integration, and commercialisation	Knowledge absorption (general)	To show how organization forms and combinative capabilities influence AC as much as prior related knowledge. It also aims to develop a framework of the coevolution of a firm's path-dependent AC and the knowledge environment.	The authors define 3 organisational forms (functional, divisional and matrix) finding that the matrix form have a positive impact on AC, the divisional moderate and the functional negative impact. They also look at combinative forms (system, coordination and socialization capabilities) showing that only coordination capabilities (lateral relationships between members of a group as a result of training and job rotation, natural liason devices and participation) have positive impact on AC. In relation to knowledge environments (stable vs turbulent), in stable knowledge environments, firms have a strong focus on the exploitation of knowledge. In turbulent environments, they tend to dedicate efforts to increase AC.	KBV & AC	T. Yes	NA	Nether lands	NA Theoretical and empirical	NA Publishing firms	NA 2
39	(Kogut & Zander, 2003)	Knowledge of the firm and the evolutionary theory of the multinational corporation	Journal of International Business Studies	Knowledge transfer (codifiability, teachability, complexity, age of the technology at the time of transfer, and the number of times transferred are used to predict the choice of transferring the ability to manufacture within the firm or by license)	Inter-organizational transfer of technical, manufacturing and product innovations	The first aim of this article is to develope continuous scales of the underlying dimensions of codifiability, complexity, and teachability. Furthermore, it aims to question a prevailing assumption that firms exist to internalize markets	In the paper it is argued that a multinational corporation arises out of its superior efficiency as an organizational vehicle by which to transfer this knowledge across borders. Thus firms specialize in the internal transfer of tacit knowledge, and capability to manufacture new products to wholly owned subsidiaries or to other parties. The empirical results show that the less codifiable and the harder to teach is the technology, the more likely the transfer will be to wholly owned operations.	Technology & innovation transfer, Dynamic capabilities	QT. Yes	Private	Swede n	Various	Survey, regression analysis	35 innovations (80%), 82 transfers
40	(Tushman, 1977)	Special boundary roles in the innovation process	Administrativ e Science Quarterly	Knowledge acquision (external information), internal diffusion measured by reported data on work-related communication	Inter-organizational and extra-organizational technical knowledge	To explore the role of boundary spanning roles in linking the organization's internal network to external sources of information	One of the key arguments of the paper is that successful innovations not only depend on external information domains but also on the communication boundaries within the organization. Special boundary roles evolve in the organization's communication network to link the organization's internal network to external sources of information. Research areas are differentiated from technical areas arguing that the former will be more linked to professional info and the latter to operational info. Communication with external areas is not distributed equally among the innovating unit's staff but through a limited set of individuals. Information from external areas enters the organization in an indirect way. Recognizing and rewarding boundary spanning activity are important, and access to areas of external information and professional literature should be eased. p	Social networks (though not explicitly stated)	QT. Yes	Private	USA	R&D	Survey and self reports gathered regularly over 15 weeks.,	345
41	(Szulanski, 1996)	Exploring internal stickiness: impediments to the tranfer of best practice within the firm	Strategic Management Journal	Knowledge transfer divided into stages: Knowledge initiation (discovery of need, seach and focused search), implementation (creation of social ties, adaptation), , ramp-up (use and resolution of unexpected problems), integration (institutionalisation)	Intra-firm transfer or practices (activities or processes)	To explore the factors that facilitate/impede the transfer of best practice within firms	Contrary to conventional wisdom that wisfactors, the major barriers to internal knowledge decis transfer are shown to be knowledge-related fa. ctors such as the recipient's lack of absorptive capacity, causal ambiguity, and an arduous relationship between the source and the recipient. Therefore, pursuing knowledge-related factors can be a promising area of intervention: developing the learning capacities of organizations, devoting scarce resources and managerial attention to foster closer relationships between organizational units, and to systematically understand and communicate practices.	Diffusion of innovations and technology transfer	QT. Yes	Private multinationa ls	USA	Various: petrochemical, IT, Communicatio ns, etc.	Survey based on a broad literature review, clinical work and feedback from the pilot questionnaire. Canonical correlation analysis	271 observation s of 122 transfers of 38 internal best-practices in 8 companies

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
38	(van den Bosch, Volberda et al., 1999)		.+ Coordination capabilities (lateral relationships between members of a group as a result of training and job rotation, natural liason devices and participation). + Matrix organisational form. +/- Divisional form moderate effect. - Functional negative impact on AC.			Dimensions of knowledge absorption: Efficiency, scope and flexibility. Efficiency refers to how organisations identify, assimilate and exploit knowledge. Scope refers the breath of component knowledge. Flexibility is the extent to which a company can access additional and reconfigure existing component knowledge
39	(Kogut & Zander, 2003)	NE	NE	.- The more complex the innovation, the higher the likelihood of being transferred to a owned subsidiary + The more codified and teachable the knowledge, the more likely to be transferred to a thrid party	NE	NE
40	(Tushman, 1977)	NE	.- Big organizations develop within them, different and idisyncratic norms, values, and coding shemes which impinges ease of communication. + Gatekeepers with strong extra-organizational communication. who connect the organization to specialised knowledge. + Opinion leaders who are sought after for advice and influence decisions and mediate the transfer of information from external information areas into the organization's internal communication network.	. + Adjustment between the unit's information processing needs (based on the nature of the task) and the number of boundary roles	NE	NE
41	(Szulanski, 1996)	. - Lack of motivation, source not perceived as reliable	. - Lack of motivation, lack of absorptive capacity, lack of retentive capacity	.- Characteristics of the knowledge transferred (causal ambiguity, unprovenness),	see KT processes	. - Barren organizational context, ardous relationships

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
42	(Szulanski, 2000)	The process of knowledge transfer: a diachonic analysis of stickiness	Organizational Behavior and Human Decision Processes	Initiation, Implementation, ramp up and integration of knowledge. (Items for the measures of stickiness the dependent variables is based on typical events expected at a particular stage of the transfer.)	Intra organizational transfer of org practices	To develop a process model of knowledge transfer, identifying stages of transfer and factors that are expected to correlate with difficulty at different stages of the transfer	The pattern of results is consistent with the general expectation that factors affecting the opportunity to transfer are more likely to predict difficulty during the initiation phase, whereas factors affecting the execution of the transfer are more likely to predict difficulty during impTraits of the source unit such as Motivation and Perceived Reliability are significant in the first three stages of the transfer. Traits of the recipient unit, most notably Absorptive Capacity, become significant during implementation. Causal Ambiguity is significant at all stages of the transfer. Causal Ambiguity and the lack of recipient's Absorptive Capacity appear to be the most important predictors of stickiness.	AC & RBV	QT. Yes	Private	USA & Europe	Various	Survey, regression analysis	122 transfers of org practices in 8 firms
43	(O´Dell & Grayson, 1998)	If only we knew what we know: indentification and transfer of internal best practices	California Management Review	Knowledge transfer	Intra-organizational transfer of best practice	To analyse the processes, enablers and barriers for the identification and transfer of practices within the firm.	The paper suggests 7 keys effective transfer that are: 1) Use benchmarking to create a sense of urgency or find a compelling reason to change. 2) Focus initial efforts on critical business issues that have high payoff and are aligned with organizational values and strategy. 3) Acknowledge that an organization can only invest in and support a finite amount of change at any one time. 4) Don't let measurement, Rather than spend time debating "who's best" focus on those areas where dramatic differences in performance point to a real underlying process. 5) Change the reward system to encourage sharing and transfer. 6) Use technology as a catalyst to support networks and the internal search for best practices, but don't rely on it as a solution. 7) Leaders will need to consistently and constantly spread the message of sharing and leveraging knowledge for the greater good.	NE	T. Yes	NA	USA	NA	NA	NA
44	(Lam, 1997)	Embedded firms, embedded knowledge: problems of collaboration and knowledge transfer in global cooperative ventures	Organization Studies	Knowledge transfer	Inter-firm (IJV) business-related knowledge	To explore the importance of knowledge structures and work systems in influencing the sucess of collaborative ventures.	The socially embedded nature of knowledge, can impede cross-border collaborative work and knowledge transfer. It also highlights how the way in which knowledge is structured, utilized and transmitted can vary considerably between firms in different societal settings. The paper compares the professional (British) and the organizational (Japanese) models of skills formation.	Tacit / explicit knowledge	QL. Yes	Private international joint ventures	UK & Japan	Electronics	interviews	50 interviews in 2 firms
45	(Rich, 1991)	Knowledge creation, diffusion and utilization: perspectives of the founding editor of Knowledge	Knowledge-Creation Diffusion Utilization	Information transmission, pick up, processing (understanding, testing against own assumptions, validity & reliability, transformation) and application (decision to use the info).	NE	To review the state of the art of knowledge utilization	The author identifies many of the challenges in the discipline of the knowledge utilization field, among which are the following: (1) Crisis of legitimacy in academic circles: There is an assumption that the rational decision maker will act on the results of the search initiated. No clear distinction is drawn between obtaining and using info. Acquision responds to the need to minimize levels of risk and uncertainty. (2) Lacuna in theory building, Three groups of explanations for use/non use dominate the field (but has to produce a tested and validated theory of knowledge) Communication-related theories, the actions of the rational actor and the product of bureaucratic politics. (3) Measurement of the phenomena where 4 stages are identified: Transmission, pickup, processing and application and where methods of data collection have traditionally been decisions made, self-reports though interviews... (4) Stalled development. Many of these challenges constitute a solid case for future research	Knowledge utilization (& utilization social sciences)	T. Yes	NA	USA	NA Theoretical	NA Various	NA NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
42	(Szulanski, 2000)	. + Trustworthy, reliable and knowledgeable sources will ease initiating a transfer. - Incompatibilities of language, coding schemes and cultural conventions may widen communication gaps	. - Lack of awareness or understanding of own operations or lack of performance measures hinders the ability to recognize opportunities and act upon them. + AC of the recipient and the presence of relevant expertise will ease the ramp-up stage. + Implementation will be facilitated if unexpected difficulties are solved, challenges to the routinization of the new practice are addressed and the new routine maintained	.- Causal ambiguity and uncertainty of the benefits of the practice may hinder the initiation process as well as the resolution of problems in the ramp-up stage when the cause-effect of problems is unknown.	. + Transfer specific ties will ease information and resource flows and will aid the necessary planning and coordination in the implementation phase.	NE
43	(O´Dell & Grayson, 1998)	. - The lack of contact, relationships, and common perspectives among peopie who don't work side by side.	. - Ignorance of "1 did not know that you needed this" or "I did not know that you had it". - Lack of AC. - Lack of relationship (or ardous relationships). - Organizational structures that promote "silo" behavior (+ decentralization with corporate responsibility for improvement). - A culture that values personal technical expertise and knowledge creation over knowledge sharing (including the not-invented-here syndrome). - Not allowing or rewarding people for taking the time to learn and share and help each other outside of their own small corporate village. + Intrinsic rewards to sharing and transmiting information, as artificial rewards won't have much effect.	. - Over-reliance on transmitting "explicit" rather than "tacit" information. + Demonstrated sucess of the practice. + In technical systems a framework for classifying information is needed so IT systems will be used. +/- Technology in principle is an enabler but often the really important and useful information for improvement is too complex to put in-line.	. + A compelling call to action (eg. significant costs reduction or decentralized structures). + Benchmarking processes to identify, understand and adapt outstanding practices from organizations, including one's own organization with best practice teams and knowledge and practice networks. + Support from senior leadership who will grant support if they are convinced transfer has merit and real impact.	NE
44	(Lam, 1997)	NE	.- Complex social interactions and team relationships	.- Many of the difficulties encountered lie in the nature of knowledge and its social embeddedness. - Degree of tacitness	NE	NE
45	(Rich, 1991)	.+ Bureaucrats have a preference for using information obtained from sources "in house" (often mistrust outside sources). - Different reward systems between users (rewarded for providing concrete results) and source (scholarly productivity).	.+ Existence of systems aimed to obtain information on a routine basis. Organizational actors want to minimize levels of risk and uncertainty. + Adequate skills, training to access, process and utilize scientific information. - Time and resource constrains that don´t allow to search beyond the administrator's internal environment. + Use of research in US policy domains is primarily affected by the "personal" and "political" dymension	. + Brief, clearly written reports that contain actions which potentially could be taken. + Information that confirms policy positions already held, or the intuition of the user (policy maker).	NE	Some types of utilization are mentioned: 1) complete implementation of information as presented, 2) adaptation of information, 3) partial use, 4) steps have been taken towards implementation, 5) non-utilization (information considered but then rejected, nothing's done with the info, implementation has not occured but is being considered.

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
46	(Kim, 1998)	Crisis construction and organizational learning: capability building in catching-up at Hyunday Motor	Organization Science	Knowledge acquisition, assimilation, and improvement	Absorption of external knowledge (NE)	To develop a model of organisational learning in the context of catching-up process and also a model of crisis construction and organizational learning by empirically analysing the history of technological transformation of at Hyundayi. Aims to answer how Hyundai acquired technological capability to transform itself from imitative 'learning by doing' to innovative 'learning by research'.	The paper shows how Hyundai pursued a strategy of independence transforming itself from a mere assembler of Ford models to a designer and explorter of its own cars in less than 3 decades by developing absorptive capacity. In its process of advancing from one phase to the next through the preparation for and acquisition, assimilation, and improvement of foreign technologies, Hyundai managed to acquire external (migratory) knowledge to expand its prior knowledge base thus facilitating identification and acquision of technology and learnig. The firm also proactively constructed crises as a strategic means of intensifying its learning effort.	OL is framed as a function of the AC	QL. Yes	Private multinationa l company	South Korea	Automotive	Case study	1
47	(Chua, 2002)	The influence of social interaction on knowledge creation	Journal of Intellectual Capital	Knowledge creation (measured as the quality of curriculum development)	Knowledge creation intra-organizational	To examine the influence of social interaction on the process of knowledge creation	The findings show a positive correlation between the level of social interaction and the quality of the modules developed. Among the three dimensions of social interaction, the relational dimension was shown to be the strongest predictor to the quality of the modules developed	SNA	QT. Yes	Public	Singap ore	Higher Education	Questionnaires (to teachers & students)	102 Academics & NE students
48	(Jacob & Ebrahimp ur, 2001)	Experience vs expertise: The role of implicit understandings of knowledge in determining the nature of knowledge transfer in two companies	Journal of Intellectual Capital	Knowledge transfer	Intra-organizational transfer of business-related technical	To contribute to understand the issue of knowledge transfer, by exploring how local and tacit notions of what is knowledge determine what types of intraorganizational mechanisms for knowledge transfer are preferred in a given company setting	Organizational culture and the nature of the industry in question, are important determinants of the value of tacit knowledge. Two models are outlined. The EXPERIENCE model, where the experience of people becomes critical and in order to broaden narrow networks, structural changes may be needed. In the EXPERTISE model knowledge transfer seems to work more effectively in situations where there is a clear understanding of the purpose to which the knowledge is to be put.	NE	QL. Yes	Private	Swede n	Automotive and biomedicine	Interviews, Case Study; Comparative/ev aluators	2 firms, 16 interviews
49	(Bhatt, 2000)	Organizing knowledge in the knowledge development cycle	Journal of Knowledge Management	Knowledge creation, adoption, distribution, review	Intra-organization (NE)	To draw a knowledge development cycle and to identify the strategies most likely to enhance each of these aspects.	The knowledge development process is divided into 4 aspects: knowledge creation, adoption, distribution, review. The author argues that none of these processes are linear or sequential, and several feedback loops occur, yielding interdependent processes.	NE	T. Yes	NA	USA	NA Wholly Theoretical	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
46	(Kim, 1998)	NE	.+ Intensity of effort or energy devoted to enhance problem solving skills (that represent the capacity to create new knowledge) accomplished through eg. practice trials. + OL facilitated by the SECI modes of knowledge conversion. + Organizational factors (-see Nonaka- intention, autonomy, fluctuation, creative chaos, redundancy, requisite variety and entrepreneural leadership) affect formal and informal processes and structures that facilitate OL	.+ Prior related knowledge bases.	NE	NE
47	(Chua, 2002)	NE	NE	NE	. + Positive correlation between the level of social interaction and the quality of knowledge created. + the relational dimension of the social interaction (i.e. care, cooperation and identification) is a stronger predictor of the quality of knowledge created than cognitive dimention (shared languages, codes and narrative), and this more than the structural (network configuration) dimension.	NE
48	(Jacob & Ebrahimpur, 2001)	NE	.+ The conceptions of knowledge whereby an emphasis on tacit knowledge will help implementing effective mechanisms for its transfer	NE	ne	ne
49	(Bhatt, 2000)	. + Complexity of the media: the medium used to transfer knowledge should be as complex as to handle the complexity of knowledge (face to face - telephone- email- print...)	. + Probing and learning facilitates KW creation (as it is always a probable event). + Structure the kw creation process: idea generation-screening-selection-development-testing and commercial launch. + Understanding the fundamentals of knowledge to facilitate the "reinvention" and thus transmission of kw. + Self managed teams and collaborative arrangements to foster collective learning within firms.	.- + Validity: the extent to which knowledge-base produces socially accepted solutions of the problems.	The 4 processes are characterized as follows: (1) Kw creation an emergent, continuously evolving process is facilitated by individuals that are able to learn and generate new "realities" by breaking down rigid thinking and assumptions. 2) Three ways of creating knowledge are identified: imitation, replication and substitution. (3) - Kw distribution is hindered by management mentality of supervision and order because it limits the opportunities for the formation of social units and groups to come together. Besides inflexible structures. 4) + Knowledge review is facilitated by clustering knowledge taking into account the environment and org problem.s	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
50	(Chen, 2004)	The effects of knowledge attribute, alliance characteristics, and absorptive capacity on knowledge transfer performance	R&D Management	Knowledge transfer (In this study, the knowledge transfer performance measure was a five-item scale reporting performance as perceived by the respondents. These items reflect the degree to which the firm acquire the targeted knowledge and the degree to which the acquired knowledge contributes to the firmÆs technology development, new product development, human resource quality, and production efficiency)	Inter-organizational technical knowledge	The main purpose of this study is to examine the effects of knowledge attribute, alliance characteristics, and firm's absorptive capacity on the performance of knowledge transfer.	The findings suggest that knowledge transfer performance is positively affected by the explicitness of knowledge and firm's absorptive capacity; that equity-based alliance will transfer tacit knowledge more effectively while contract-base alliance is more effective for the transfer of explicit knowledge; and that trust and adjustment have positive effects while conflict possesses a curvilinear effect on knowledge transfer performance.	Knowledge transfer and AC	QT. Yes	Private	Taiwan	high-tech (semiconductors, computer, communications, biotech...)	Questionnaire	137 (27.4%)
51	(Darr, Argote et al., 1995)	The acquisition, transfer, and depreciation of knowledge in service organisations: productivity in franchises	Management Science	Knowledge acquision and transfer (Cumulative number of units produced is a proxi for knowledge acquired through production. Decrease in unit cost reflects organizational learning)	Operational knowledge transfer between pizza franchises	To examine the acquisition, depreciation and transfer of knowledge acquired through learning by doing in service organizations	It is found that as the organizations gain experience in production, the unit cost of production declines significantly. Knowledge acquired through learning by doing is found to depreciate rapidly in these organizations. Knowledge is found to transfer across stores owned by the same franchisee but not across stores owned by different franchisees.	Knowledge transfer	QT. Yes	Private	USA	Fast food	Archival data, interviews. Ecuation modelling	36 stores
52	(Soo, Devinney et al., 2002)	Factors contributing to organizational knowledge creation	INSEAD Working Papers. 2002/56/MKT	Knowledge acquision, knowledge creation (measured as new ideas, new insights and new ways of doing things generated from a problem solving situation) and knowledge utilization	New knowledge in the context of problem solving, intra-organizational	The primary interest of this paper is the investigation of factors that contribute to new knowledge creation. The fundamental question it aims to address is how organizations create new knowledge?	From the survey results it was found that knowledge sourcing and creativity, and consensus in problem solving have significant direct effects on new knowledge creation. Also that informal networking and individual absorptive capacity have positive effect on knowledge creation. The criticality of the problem being addressed is significant in influencing kw creation. Interview results	Knowledge creation	QT & QL. Yes	Private large multinationals	Australia	Industrial manufacturing, professional services	Multiple case study using survey & interviews	5 firms (80 interviews, 339 questionnaires)
53	(Von Krogh, 1998)	Care in knowledge creation	California Management Review	Knowledge creation	Internal transfer of business-related knowledge	To explore the issues and key elements of knowledge processes such as initial sharing of knowledge, effective creation of products and services, prototyping and global leveraging of knowledge thoughout the company.	The paper outlines two perspectives to conceptualize knowledge: a "cognitivist" and a "constructionist" perspective. The first places an emphasis on the representation of knowledge, the second on the construction or creation. Knowledge creation is argued to be a fragile process that is enabled by values that guide relationships in organizations and particularly the value of care in organizational relationships. Care is defined as serious attention (heed), a feeling of concern and interest. Care shapes the knowledge creation processes. There are two processes on the individual or social level respectively; capturing and transacting, when care is low, and bestowing and indwelling when it is high.	The paper has an OD approach (foster "care")	T. Yes	NA	Switzerland	NA	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
50	(Chen, 2004)	. + Equity-based alliances transfer tacit knowledge more effectively while contract-base alliance is more effective for the transfer of explicit knowledge	. + Knowledge transfer performance is positively affected firm's absorptive capacity	. + knowledge transfer performance is positively affected by the explicitness of knowledge	. + Trust and adjustment have positive effects. +/- Conflict possesses a curvilinear effect on knowledge transfer performance.	Knowledge transfer performance is defined as "the degree to which the firm acquires the targeted knowledge and the degree to which the acquired knowledge contributes to the firm's technology development, new product development, human resource quality, and production efficiency"
51	(Darr, Argote et al., 1995)	. + Stores that are owned by the same franchisee experience levels of knowledge transfer inexistent in other stores	. + Firm-specific learning effects contributed to reductions in production cost independent of calendar time, scale effects and product mix.	NE	NE	. +/- Factors that are likely to contribute to the differences observed include prevailing characteristics of individual employees (e.g. their skill levels and lengths of service), characteristics of the organizations (e.g., opportunities for specialization and standardization), and the demand function for the product.
52	(Soo, Devinney et al., 2002)	NE	. + Knowledge sourcing and creativity and consensus in problem solving have significant direct effects on new knowledge creation. - Inhibiting factors were (1) lack of an effective formal database system to facilitate knowledge sharing, (2) an inability to transfer knowledge or best practices across business units, and (3) lack of structured mechanisms or forums that allow employees to tap into each other's tacit knowledge.	. + Problems that are critical for a firm have a more significant direct effects on new knowledge creation	. + Informal networking and individual absorptive capacity (the ability of an individual to absorb, share and apply kw) have positive effect on knowledge creation	The following aspects are explored: Formal networking. Informal networking. Information acquisition. Knowledge acquisition. Individual absorptive capacity. Organizational absorptive. Comprehensiveness. Creativity. Consensus. Criticality of problem. Typicality of problem
53	(Von Krogh, 1998)	.+ Care in personal relationships fosters bestowing and indwelling which in turn enhances social knowledge creation processes through the sharing of tacit knowledge creating new services or product concepts.	. - Knowledge is created by a process of justifying the truthfullness of someone's beliefs, and this justification is impeded by a) a legitimized language, b) stories -of failures- and habits -or taken for granted routines, c) formal procedures and d) company paradigms that rule out beliefs that not in accordance. + Incentive systems focused on people helping each other, with explicitly formulated values of care, shared incentives -such as team based- and assessments done by both managers & subordinates.	NE	. - Low care in relationships force individuals to "demonstrate" their expertise constraining creative knowledge processes and using accepted and conventional language. + Practices such as mentoring, training programmes, project debriefings, social events, etc. will stimulate good relationships and care.	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
54	(Tranfield, Bessant et al., 2003)	Knowledge management routines for innovation projects: developing a hierarquical process model	International Journal of Innovation Management	3 phases of KM: discovery (emphasises the need to scan and search environments), realisation (how the organisation can sucessfully implement the innovation) and nurture (maintaining and supporting the innovation through various improvements). 8 generic routines Search, Capture, Articulate, Contextualise, Apply, Evaluate, Support and Re-innovate	Intra organizational transfer of business related knowledge	to develop a process model for knowledge management routines in the context of innovation projects	A high-level conceptualisation from the literature, of a model characterising knowledge management as consisting of three distinct phases: Discovery, Realisation and Nurture. In addition the paper details eight generic routines: Search, Capture, Articulate, Contextualise, Apply, Evaluate, Support and Re-innovate. It is found that successful management of organisational knowledge in the context of innovation requires attention to be paid to all eight generic routines and to the influence of enablers and blockers operating both inside and outside the framework of routines.	Organisational routines	QL. Yes	Public & private	UK	Software, Health, Construction, High tech.	Case study, analysis of "social episodes" of open ended interviews, archival data and observations	4
55	(Feller, 2002)	Inter-partner process learning in R&D alliances - a step towards process innovation. Master Thesis. Helsinki University of Technology.		Knowledge transfer and learning (process learning is measured both as direct transfer of processes and process improvement ideas, and as improvements in the ability to learn from R&D collaborations in the future)	Inter-organizational in R&D alliances, technical business-related kw	To investigate how characteristics of a specific R&D collaboration relationship influence the transfer of process-related knowledge between the partners.	The author develops a framework of factors that are proposed to influence the transfer of process-related knowledge in R&D alliances emphasizing the following factors: Trust, Relationship Governance, Competitive Situation, Organizational Similarity and Knowledge Overlap within R&D cooperation relationships influence Process Learning in R&D alliances.	Knowledge transfer and learning	QL. Yes	Private	Finla nd	Information and communicatio n technology	Case study	2
56	(Kotabe , Martin et al., 2003)	Gaining from Vertical Partnerships: Knowledge Transfer, Relationship Duration and Supplier Performance Improvement in the U.S. and Japanese Automotive Industries	Strategic Management Journal	Technology and knowledge transfer (Tech transfer is measures with items such as "We share high-level engineering capability with our partner firm", "We are willing to transfer technologies to our partner firm")	Inter-organizational technical automotive-related knowledge	To study sources of operational performance improvement in supplier partnerships, in particular relational assets and knowledge transfer issues	Simmilar patterns are found in the two survey samples of Japanese and U.S. automotive suppliers. The effect of ordinary technical exchanges on supplier performance improvement does not vary with relationship duration. The effect of higher-level technology transfer, however, grows more positive as relationship duration increases. The findings highlight the role of relational assets and show that it is important to distinguish between simple techniques and higher-level technological capabilities when studying interfirm relationships	Technology transfer	QT. Yes	Private	USA & Japan	Automotive	Survey. Correlation and regression analyses	97 US firms (24,3%) and 105 Japanesse (18.2%)
57	(Twomey, Twomey et al., 2000)	Antecedents and dynamics of the business school - business interface	The International Journal of Organization al Analysis	Knowledgde creation, transfer and use. Communication density and other variables were measured by developing questions from the literature. Barriers to interaction are conceptualized as few mechanisms for interactions and desire for quick solutions	Inter-organizational (Business schools-business) management knowledge.	To examine the dynamics between United Kingdom business schools and business and to investigate environmental, institutional, and behavioral factors that affect the interorganizational knowledge development and transfer.	Results support the hypothesis that interface collaboration and face-to face communications are important mediators of academic-business outcomes learning business practices and cooperative research. In particular, the higher the level of trust, and entrepreneurial institutional characteristics, the lower the barriers to interaction. The greater the emphasis on research methodology the greater the barriers. Simmilarly the greater the activity specialization (intra-academic communication density) the lower the collaboration with business	Transaction costs, extensions of transaction costs and power properties	QT. Yes	Public	UK	Business Schools	Survey. Correlation analysis	61 (20%)

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
54	(Tranfield, Bessant et al., 2003)	NE	. + Small size that enables regular, face to face relationships. - Cultures and mindsets reactive to change. + Charismatic, maverick tendency of leadersn and champions in driving innovation and change. - Hierarchical structures based on command and control. - Lack of incentives to innovate. - Day to day job pressures. + Involvement of all relevant parties.	.+ Previous related knowledge or experience	NE	NE
55	(Feller, 2002)	. + Organizational simmilarity, particularly in terms of process-orientedness and centralization.	. + Trust that can be structural or calculative (based on calculative motives such as expected benefits of the relationship, and reputation and behavioral trust (relates to the expectations that a firm has concerning the non-opportunistic behavior of its partners)	. + Knowledge overlaps facilitate knowledge transfer particularly both technical and R&D knowledge.	. - Too strict procedural governance can inhibit innovation during a joint R&D project, and too strict safeguard mechanisms (such as strict contracts) can prohibit knowledge creation, sharing and thus learning between partners.	NE
56	(Kotabe , Martin et al., 2003)	. + Number of technical exchanges: The more technical exchanges si between the buyer and the supplier, the higher stand] the supplier performance improvement relative to 2-3 years earlier	NE	NE	. + Duration of the relationship: The positive association between technology transfer (higher-level transfers as opposed to simple technical exchanges) and supplier performance improvement becomes stronger as link duration increases.	NE
57	(Twomey, Twomey et al., 2000)	. + The higher the level of trust, and entrepreneurial institutional characteristics, the lower the barriers to interaction	. - The greater the activity specialization (intra-academic communication) lower the collaboration with businesses	NE	. + Interface collaboration and face-to-face communications are important mediators of academic-business outcomes	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
58	(Von Hippel, 1994)	Sticky information and the locus of problem-solving: implications for innovation	Management Science	Knowledge transfer	Inter-firm knowledge transfer NE	To explore the impact of information stickiness on the locus of innovation-related problem solving	Four patterns of the distribution of innovation-related problem solving are found. (1) A move to the locus of sticky information: when sticky information needed by problem solvers is held at one site only, problem solving will be carried out at that locus, other things being equal. (2) Iteration of locus of information: when more than one locus of sticky information is called upon by problem solvers, the locus of problem solving may iterate among these sites as problem solving proceeds. (3) Task partitioning: when the costs of such iteration are high, then, problems that draw upon multiple sites of sticky information will sometimes be "task partitioned" into subproblems that each draw on only one such locus. (4) Unsticking information: investments will be made to reduce the stickiness of information at some locations	Diffusion of innovations	T. Yes	NA NA	USA	NA NA	NA NA	NA NA
59	(Cummings & Teng, 2003)	Transferring R&D knowledge: the key factors affecting knowledge transfer success	Journal of Engineering and Technology Management	Knowledge transfer, knowledge internalization (= Knowledge transfer success is measured using a 22-item scale that includes satisfaction related to cost, schedule and performance, knowledge commitment and knowledge ownership)	Inter-organizational (R&D partners) technical knowledge	To explore the factors that facilitate/hinder knowledge transfer in R&D partnerships	Several key variables were found to affect knowledge transfer success: (a) both R&D units understanding where the desired knowledge resides within the source, (b) the extent to which the parties share similar knowledge bases, and the extent of interactions between the source and the recipient to (c) transfer the knowledge and (d) participate in an articulation process through which the source knowledge is made accessible to the recipient.	Knowledge & Technology transfer	QT. Yes	Private	USA	Various. 15 industries	Survey. Correlation and regression	69 (8%)
60	(Grant, 1996)	Prospering in Dynamically-competitive Environments: Organizational Capability as Knowledge Integration.	Organization Science	Knowledge integration (seen as the essence org. capabilities -firm's ability to perform repeatedly a productive task which relates either directly or indirectly to a firm's capacity for creating value through effecting the traasformation of inputs into outputs, p.337-).	Intrafirm	To develop a knowledge-based theory of organizational capability	The tenet of the paper is that, organizational capabilities are becoming the primary basis upon which firms establish their long-term strategies given the unstable and unpredictable nature of the markets. If the strategically most important resource of the firm is knowledge, and if knowledge resides in specialized form among individual organizational members, then the essence of organizational capability is the integration of individuals' specialized knowledge. The capabilities of a firm are structured hierarquically based on the scope of knowledge. Two mechanisms are identified to integrate knowledge: direction (codifying tacit knowledge into explicit rules) and routines (particularly to account for the tacitness of knowledge). Organizational capabilities generate competitive advantage depending on the efficiency, scope and flexibility of knowledge integration mechanisms.	KBV and Dynamic capabilities	T. Yes	NA	USA	NA	NA	NA
61	(Kogut & Zander, 1992)	Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology	Organization Science	Knowledge creation, transfer and learning	Intrafirm knowledge creation and transfer (NE)	From a knowledge-based approach to study organizations, the paper seeks to discuss why organizations exist, what they do and the nature of capabilities	It is argued that firms are a repository of capabilities, and these capabilities are a composite of individual and social knowledge. The stability of these relationships shape the characteristics and inertia of the organization. This inertia is difficult to change due to the intricate nature of the knowledge embeded in the capabilities and the ingredients of new learning. Firms learn new skills by recombining their current capabilities. Because new ways of cooperating cannot be easily acquired, growth occurs by building on the social relationships that currently exist in the firm. What a firm has done before, tends to predict what it can do in the future.	RBV	T. Yes	NA NA	USA & Sweden	NA NA	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
58	(Von Hippel, 1994)	Attributes of the providers of information	Attributes of the seekers of information	. - Stickiness of information is the incremental expenditure required to transfer a unit of information in a usable form to a information seeker. Reasons for stickiness may be the nature of the information itself, amount of information that must be transferred and the attributes of seekers and providers of information	NE	NE
59	(Cummings & Teng, 2003)	. +/- Phisical distance between source and recipient had no significant effect on KT success	. - Norm distance (degree to which knowledge transfer parties share the same organizational culture and value systems) significant negative effects on KT. +/- Learning culture of the recipient had no significant effect on KT success	. - Regression models found significant negative effects between knowledge articulability and embeddedness (number of knowledge elements and related sub-networks that need to be transferred) and KT success. - Knowledge distance (degree to which source and recipient possess similar knowledge) has significant negative effects on KT.	. - Transfer activities has significant positive effect on KT success.+/-Organizational distance (defined as the organizing mode through which the source and the recipient transfer knowledge) had no significant effect on KT success.	+/- Project priority had no significant effect on KT success
60	(Grant, 1996)	NE	NE	NE	Three aspects of knowledge integration are critical: EFFICIENCY: how productive firms are in utilizing the knowledge stored within individual organizational members, which is dependent on (a) The Level of Common Knowledge, (b) Frequency and Variability of Task Performance, (c) Structure. SCOPE or span of knowledge integrated in a capability increases the potential of sustaining CA by making different types of specialized knowledge complements and by increasing causal ambiguity, thus making it more difficult to replicate. FLEXIBILITY or ability to continually either extend existing capabilities or reconfigure existing knowledge into new capabilities.	NE
61	(Kogut & Zander, 1992)	NE	NE	NE	.+ One of the key arguments of the paper is that firms learn new skills by recombining their current capabilities	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
62	(Zander & Kogut, 1995)	Knowledge and the Speed of the Transfer and Imitation of Organizational Capabilities: An Empirical Test.	Organization Science	Transfer of Capability (replication of manufacturing capability) and imitation of capability (extent to which important aspects of the capab. are possesed by many firms and the ability to improve the product)	Major (technical & product) innovations, inter-organizations	To investigate the dimensions of the underlying knowledge that determine speed of transfer and imitation of organizational capabilities.	The paper shows that the degree of codification and how easily capabilities are taught has a significant influence on the speed of transfer. It is argued that capabilities which can be easily communicated within the firm are more likely to be easily imitated by competitors. The determinants of the time to imitation are found to be the extent to which knowledge of the manufacturing processes is "common" among competitors, and the degree of continuous recombination of capabilities leading to improvement of the product or the manufacturing process. the transfer and recombination of organizational capabilities are the foundation of an evolutionary theory of the firm.	Technology transfer & dynamic capabilities	QT. Yes	NE	Sweden	Various	Survey	35 innovations (80%) 1 questionaire for each made by 20 firms.
63	(Carlsson, 2003)	Knowledge managing and knowledge management systems in inter-organizational networks	Knowledge and Process Management	Knowledge managing (a capability pertaining to kw creation, kw organization, kw storage/retrival, knowledge transfer, knowledge application)	Inter-organizational knowledge transfer (NE)	To conceptualize knowledge managing within the context of inter-organizational networks.	Three types of networks are identified: extra-networks (designed and governed by the firm with restricted access to other firms) inter-network (where participation is not restricted and is open to anyone), and open networks. The use of KMS and ICT are identified as critical in gaining and sustaining competitive advantage through economies of knowing (beyond economies of scope and economies of scale). A trend is identified whereby firms will invest less in proprietary systems' architecture, and more into buying and renting open architecture provided by specialists firms. KMS are explored in the	RBV & AC and social networks	T. Yes	NA	Sweden	NA	NA	NA
64	(Van den Bosch, van Wijk, et al., 2003)	Absorptive capacity: antecedents, models and outcomes	ERIM Report Series Research in Management. Erasmus Research Institute of Management, Rotterdam School of Management	Understand external knowledge, acquire, assimilate, transform, apply, exploit	Knowledge absorption	The report is a review of AC and aims to contribute to narrow the gap between the speed of proliferation of theoretical and empirical evidence and the speed of accumulation of scientific knowledge on AC	The paper reviews (though not comprehensively) literature on AC distinguishing between antecents and outcomes. The set of antecedents include (1) Prior related knowledge (2) internal mechanisms, (3) combinative capabilities and (4) external sources of knowledge. Set of outcomes include: innovative capabilities, Innovative performance, expectation formation, strategic renewal and new products & services. The paper highlights the multilevel (individual, unit, organizational & firm -MNC-) and transdisciplinary nature of AC. Three suggestions are made for future research: i) work more on construct development and measurement, ii) emphasise multilevel theory, iii) model building.	RBV & AC	T. Yes	NA NA	Netherlands	NA NA	NA NA	NA NA
65	(Liao, Welsch et al., 2003)	Organizational Absorptive Capacity and Responsiveness: An Empirical Investigation of Growth-Oriented SMEs	Entrepreneurship: Theory & Practice	AC (measured by external knowledge acquistion and and intrafirm knowledge dissemination - measured by scales that includes items dealing with how often the responsible entities in the business unit meet with clients, competitors, and others)	NE	This study explores the question of the extent to which the prior knowledge of small and medium-sized enterprises (SMEs) has an impact on their capability to respond to the external environment.	Results indicate that both external knowledge acquision and internal knowledge dissemination are positively related to SME's organizational responsiveness. These effects seem to occur irrespective of size and age. In turbulent environments, intrafirm knowledge dissemination was more strongly associated with responsiveness than external knowledge acquision. Knowledge acquision was found to impact organizational responsiveness more when the firm pursued a more proactive strategic orientation	AC	QT. Yes	Private	USA	Manufacturing & service	Survey. Correlation & regression analysis	Random sample. 242 firms (28.4 %) from Washington State

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
62	(Zander & Kogut, 1995)	NE	NE	. + Codifiability and teachability increase the speed of transfer. +/- Complexity (defined as the number of distinctive skills, or competencies, embraced by an entity or activity) had no significant effect on speed of transfer. +/- Systems dependence (the extent to which transfer or imitation of a capability is impaired due to dependence on many different (groups of) experienced is people for its production) had no significant effect on transfer. None of the above characteristics of the manufacturing capability do affect the hazard rate of imitation.	NE	. + Parallel development of capabilities or technological competition, speeds transfers of capabilities
63	(Carlsson, 2003)	NE	. + KMS and ICT can be used to enhance the following phases of NPD: creation (exploration and opportunity identification and ideas generation), development phase (design and engineer) and diffusion and 'ending' phase (exportation, testing and support).	NE	NE	NE
64	(Van den Bosch, van Wijk, et al., 2003)	DIMENTIONS of AC: (1) the ability to recognize and value new external knowledge, (2) assimilate and (3) commercialise Lane & lubatkin (1998). Van den bosch (1999) suggested distinguishing the efficiency (activities to absorb), scope (breadth of knowledge that is absorbed) and flexibility (ability to absorb additional and reconfigure existing knowledge. Van wijk et al.(2001) highlighted the depth (absorption of new additional knowledge in a domain where kw is already present) and breadth (abosorption in other domains) dimension of absorptive capacity. Zahra and george (2002) suggest acquisition, assimilation, transformation and exploitation dimensions.	ANTECEDENTS of AC: (1) prior related knowledge (general knowledge of related domains, basic skills and problem solving methods, prior learning experience, shared language, r&d intensity, (2) internal mechanisms (such as structure of communication, character and distribution of expertise, (3) combinative capabilities (systems capabilities, coordination capabilities and socialization capabilities), (4) external sources of knowledge: knowledge complementarity and experience and social integration mechanisms.		The main OUTCOMES mentioned on the paper are: Innovative capabilities, innovative performance, Expectation formation (to predict more accurately the nature and commercial potential of technological advances), strategic renewal (dyer and singh, 1998) and new products & services (volberda et al., 2001). However the paper does not adress	The authors provide brief accounts of examples of studies of the role of AC in organisational outcomes.
65	(Liao, Welsch et al., 2003)	NE	NE	NE	NE	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
66	(Reagans & McEvily, 2003)	Network Structure and Knowledge Transfer: The Effects of Cohesion and Range	Administrative Science Quarterly	Knowledge transfer (ease of knowledge transfer was measured using scales with items such as "It would be easy for me to explain to this person a key idea, concept, or theory in my area of expertise" or "This personÆs expertise makes it easy for me to explain a key idea, concept, or theory in my area of expertise".	Intra-organizational transfer of technical knowledge (material science consulting)	To explore how different features of informal networks affect knowledge transfer, focusing on how network structure influences the knowledge transfer process	Two classes of explanations for knowledge transfer are outlined: related to cognitive & social psichology (associative learning and absorptive capacity) and tie strength. Results indicate that the possesion of common knowledge (people with similar background) and tie strength (emotional attachment or commitment) is positively related to the ease of knowledge transfer. It is unclear whether this association changes with the degree of tacitness. Social cohesion and network range (ties that cross institutional, organizational and social boundaries) are also positively associated with the ease of knowledge transfer.	Social Networks	QT. Yes	Private	USA	R&D firm focused on materials science consulting	Survey, archival data, sociometric and egocentric techniques	104 people (92%)
67	(Kalling, 2003)	Organization-internal transfer of knowledge and the role of motivation: a qualitative case study	Knowledge and Process Management	Knowledge transfer	Intra-firm knowledge transfer (MNC) manufacturing knowledge	To explore the factors that affect the transfer of best practices across manufacturing plants	In the paper, it is argued that firm-internal knowledge transfer programmes are exercises requiring a great deal of recipient motivation and thus central to transfer sucesss. In additiong 6 groups of factors are idenfied that lie behind the transfer success: the perception of the transfer programme, aspirations and strategic ambitions, the view on (firm-internal) competition, the view on the nature of the knowledge transferred, programme management and control and local communication.	NE	QL. Yes	Private	Sweden	Manufacturing	36 interviews, within a case study. Grounded approach to data analysis.	1 firm (6 plants)
68	(Amesse & Cohendet, 2001)	Technology transfer revisited from the perspective of the knowledge-based economy	Research Policy	Knowledge transfer	Technical knowledge	To devise a revised framework for understanding and analyzing the process of technology transfer in the perspective of the knowledge-based economy	Some trends are noted in the paper as characteristic of the knowledge-based technology transfer paradigm: (1) Differentiation within a given firm between the production of knowledge and use is becoming blurred. (2) The growing blurring between intra- and inter-organizational technology transfer. Moreover, the new overall focus of firms is the construction and development of core competences that can be summarized as follows: PARTNERING zone where suppliers are quasi integrated thus taking part on building the firm's knowledge base. NETWORK zone where firms access complementary knowledge. MARKET zone is characterized by common knowledge (no specific advantage)	Technology transfer (revisited)	T. Yes	NA NA	Canada & France	NA NA	NA na	NA na
69	(Caloghirou, Kastelli et al., 2004)	Internal capabilities and external knowledge sources: complements or substitutes for innovative performance?	Technovation	Knowledge acquision, knowledge transfer (How internal and external capabilities affect the level of innovativeness were measured by the percentage of firmsÆ sales that can be attributed to products or services that were significantly improved or new to the firm in the last three years	Inter-organizational (kw not specified)	The paper attempts to investigate the extent to which the existing internal capabilities of firms (eg. absorptive capacity) and their interaction with external sources of knowledge affect their level of innovativeness	The most important point arising from the analysis relates to the parallel positive role of both internal R&D capabilities (intensity of R&D) and highly-qualified personnel (traditional notion of absorptive capacity) and the ability to interact and access external sources of knowledge via eg. strategic alliances (enhanced absorptive capacity) in raising innovative performance. This points to the necessity of the development of internal R&D capabilities and human skills in conjunction with networking capabilities and use of external sources of knowledge and information in order to produce high added value and innovation.	Knowledge transfer	QT. Yes	Private	Greece, IT, DK, UK, F, D, NL	Manufacturing (food, quemicals and radio-TV), telecoms service, computer and related activities.	Survey. Regression analysis	558 (23.7%)

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
66	(Reagans & McEvily, 2003)	. + The possesion of common knowledge (people with similar background)	.+ Tie strength (emotional attachment or commitment) is positively related to the ease of knowledge transfer. + Social cohesion and network range (ties that cross institutional, organizational and social boundaries) are also positively associated with the ease of knowledge transfer.	.+/- It is unclear whether the positive association between tie strength and knowledge transfer will increase with the tacitness of the knowledge being transferred.	NE	NE
67	(Kalling, 2003)	.+ Proximity between source and user that helps communication	.+ Cognitive abilities of both the source and the recepient. + Absorptive and retentive capacities. + Existence of social networks and subnetworks and in particular network centrality. - Unwillingness to absorb or share knowledge.	.- Tacitness: the more tacit the more difficult to transfer. - Ambiguity: the more ambiguous the more difficult to transfer. + Value of the knowledge at the source will enhance the recipient's attempts to use.	.+ Richness of communication channels (meetings, interactive encounters...)	The paper highlights a gap in the literature where it says (p.115) "few in depth studies of the ways in which people involved in knowledge transfer ventures behave, how they perceive these ventures, and whether these factors are connected to the subsequent sucess or failure of knowledge transfer".
68	(Amesse & Cohendet, 2001)	NE	Nature and intensity of the technology transfer process is inherently related to the firms focus of attention	The content of the knowledge that is revealed to an outside institution requires careful attention as has strong strategic value	AC in the new perspective is viewed as essentially active and results from the involvement of multiple groups not just the R&D department for the efficient absorption of outside technologies	
69	(Caloghirou, Kastelli et al., 2004)	NE	.+ R& D capabilities (intensity of R&D), + Highly-qualified personnel (traditional notion of absorptive capacity). + Ability to interact and access external sources of knowledge	NE	NE	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
70	(Goh, 2002)	Managing effective knowledge transfer: an integrative framework and some practice implications	Journal of Knowledge Management	Knowledge transfer (effective knowledge transfer)	Internal knowledge transfer (NE)	To explore the key factors cited as key influences on the ability to transfer knowledge	The paper outlines a set of factors that affect knowledge tranfer including: the use of technology to facilitate knowledge transfer. Organizational culture and leadership, trust, problem-solving and seeking behaviors. In addition, support structures, technology, training, skills development, rewards and organizational design are influencial elements. Knowledge recipient and knowledge types are also presented in the model.	NA	T. Yes	NA	Canada	NA Theoretical/ Narrative	NA N/A	NA N/A
71	(Ordoñez de Pablos, 2004)	Knowledge flow transfers in multinational corporations: knowledge properties and implications for management	Journal of Knowledge Management	Knowledge creation and transfer	Internal transfer of HR practices in MNC	To analize knowledge flows, particularly knowledge management systems, within multinational corporations.	The paper develops a conceptual framework for the analysis of knowledge transfer at international level that comprises the organizational capacity to use knowledge, the transfer of specific knowledge through borders and international knowledge generation. It also examines the influence of four human resource management models (exported, adapted, hybrid and open models) on organizations. It addresses particular factors that influence the transferability of organizational knowledge such as the features of this knowledge and both organizational and national culture	RBV & KBV	T. Yes	NA	Spain	NA	NA	NA
72	(Inkpen & Tsang, 2005)	Social Capital, Networks, and Knowledge Transfer	Academy of Management Review	Knowledge transfer (process through which one network member is affected by the experience of another - Argote & Ingram, 2000-. KT manifests itself through changes in knowledge or performance of the recipient unit).	Intraorganizational, inter-organizational (strategic alliances) and intra-district.	To examine how social capital dimensions of networks affect the transfer of knowledge between network members.	Three dimentions of social capital are identified: structural (network ties, network configuration and network stability), cognitive dimentions (include shared goals and shared culture) and relational (trust). Several facilitators of knowledge transfer are identified for intracorporate networks and strategic alliances (see below)	Social capital & networks	T. Yes	NA	USA	NA	NA	NA
73	(Osterloh & Frey, 2000)	Motivation, Knowledge Transfer, and Organizational Forms	Organization Science	Knowledge generation, knowledge transfer	NE	To investigate what kinds of motivation are needed to generate and transfer tacit knowledge, as opposed to explicit knowledge.	The authors claim that managing motivation is crucial for tasks which goals are difficult to formulate and to attribute to specific people, such knowledge generation and transfer. Intrinsic motivation depends strongly on the need to generate and source tacit knowledge. Thus, organizational forms that emphasize participation and personal relationship, such as liking pins or overlapping teams are needed for enhancing intrinsic motivation. Extrinsic motivation can be harnessed by independent knowledge workers and profit centers	RBV, Motivation theories	T. Yes	NA NA	Switzerland	NA NA	NA NA	NA NA

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No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
70	(Goh, 2002)	.+/- Technology is not THE solution to knowledge transfer, since people may be reluctant to share knowledge particularly in the absence of incentives to share. + The culture of the organization, particularly co-operation and collaboration and trust and a culture of problem seeking and problem solving. + Appropriate infrastructures that support KT such as: low hierarquies, horizontal communication flows, cross-functional collaboration, and reward systems to groups on more than solely financial success, measurement systems that take into account collaboration and the sharing of best practices	. - Lack of motivation, absorptive capacity and retentive capacity. + Training in creativity and experimentation . + Similar knowledge capacities between the source and the user. + Leadership that play an important role in establishing some of the key conditions required to facilitate kt.	See process	. + Inter-personal means and less structured processes (teamwork, mentoring, face to face conversations) to transfer tacit knowledge. + Technology driven, structured processes are best suited to transfer explicit knowledge.	NE
71	(Ordoñez de Pablos, 2004)	. - Organizational knowledge (eg. HR practices) reflect some idiosyncratic aspects of the national culture the organization belongs to. The culture (assumptions, beliefs and duties) of the source country may differ from the recipient country's culture, making transfer more difficult.	NE	. - Tacit knowledge is more difficult to transfer because it often becomes: complex, requires experience, trial and error, demonstration, observation and imitation to get transferred, collective (created and possessed by a large number of individuals).	NE	NE
72	(Inkpen & Tsang, 2005)	.+ Accommodation for local or national cultures minimizes cultural conflicts. + /- Cultural simmilarity is not clear: whilst some knowledge may be harder to absorb, some cultural diversity may enhance learning. + In alliances shadow of the future orients the relationship forward diminishing opportunistic behaviour and suspicius.	. + Network ties: + exchanges of personnel provide channels for knowledge exchange thus facilitating KT. In strategic alliances + strong ties built through prior partner relationship and repeated transactions. In intracorporate networks, + decentralization enables members to establish lateral ties on their own initiative, and can facilitate timely knowledge sharing. + Low personnel turnover. + Ability to learn from the partner (non competitive approach to knowledge transfer). + Shared vision and collective goals and goal clarity (in alliances). + Clear reward criteria that shows non favoritism to reduce the likehood of suspicious behaviours and block knowledge sharing.	NE	.+ In strategic alliances + multiple knowlede connections between partners such as technology linkages, alliance-parent interaction, personnel transfers and strategic integration.	NE
73	(Osterloh & Frey, 2000)	NE	NE	NE	. + Organizational forms that foster internal motivation (teams and participation) will facilitate the generation and transfer of tacit knowldge	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
74	(Zeitz, Mittal et al., 1999)	Distinguishing Adoption and Entrenchment of Management Practices: a Framework for Analysis	Organization Studies	Adoption (selection and initial use) and entrenchment (the presence of a practice which abandment is unlikely even under extreme pressure)	Intra and inter-organizational transfer of organizational practices	To develop a model to differentiate between the adoption (defined as fads) and entrenchment (defined as the embedding of practices such that they are likely to endure and resist pressure for change).	In the paper, 5 different bases are outlined that distinguish the adoption and entrenchment. 1) Compatibility (little in case of adoption, fitting into a related cluster and systems of belief in the case of entrenchment). Formality (spontaneous, serendipitous for adoption; models, rules and values in the case of entrenchment). Depth (external behaviours vs. deeply embedded practices): Systemic coherence (independent vs. coherent well articulated blueprint), Interdependencies (different levels and bases unconnected vs. levels and bases interconnected).	Institutional dnd diffusion theory	T. Yes	NA	USA	NA	NA	NA
75	(Johnston & Blumentritt, 1998)	Knowledge moves to centre stage	Science Communication	1. Knowledge Identification, 2. Knowledge Acquisition, 3. Knowledge Generation, 4. Knowledge Validation, 5. Knowledge Capture, 6. Knowledge Diffusion, 7. Knowledge Embodiment, 8. Knowledge Realization, 9. Knowledge Utilization/Application.	NE	To develop a taxonomy of knowledge processes to be combined with distinctive knowledge levels in order to build a theoretical framework.	Nine distinct but related knowledge processes are identified: 1. Knowledge Identification: the process of locating and recognizing knowledge which is relevant to the organization. 2. Knowledge Acquisition: the process of obtaining knowledge previously not available to the organization in a form in which it is available for exploitation. 3. Knowledge Generation: the process of creating new knowledge within an organization, whether through traditional research and development or the linking of previously separate information (e.g., on customer needs and technology capabilities). 4. Knowledge Validation: the process of determining both the accuracy and the value of knowledge, from the perspective of the organization. 5. Knowledge Capture: the process by which the organization gains control over particular knowledge. This process may nvolve the purchase of rights to certain proprietary knowledge from another firm, or it may be the transformation of the personal knowledge of a member of staff, or the output of a team, into an explicit organizational resource. 6. Knowledge Diffusion: the process of spread	NE	T. Yes	NA	Australia	NA	NA	NA
76	(Simonin, 2004)	An empirical investigation of the process of knowledge transfer in international strategic alliances	Journal of International Business Studies	Knowledge transfer, Learning capacity (levers and resources that can be used to recognize, assimilate and apply external knowledge - the actionable side of AC, measured by scales with items such as "your company has learned a great deal about the technology...")	Transfer of technological expertise in international alliances (inter-organizational)	To investigate the simultaneous effects of learning intent, learning capacity (LC), knowledge ambiguity, and its two key antecedents - tacitness and partner protectiveness - on technological knowledge transfer	Consistently, learning intent (as a driver) and knowledge ambiguity (as an impediment) emerge as the most significant determinants of knowledge transfer. Moreover, the effects of partner protectiveness and LC on the learning outcome are moderated by the firm's own culture towards learning, the size of the firm, the structural form of the alliance, and the fact that partners may or may not be competitors. LC is refined into three distinct components: resource-based LC (appropriateness of resouce deployment), incentive (systems, rules and guidelines to steer learning and foster commitment to learn) and cognitive-based LC (attitudes & beliefs towards learning)	Learning theories & AC	QT. Yes	Private large & medium firms	USA	NE	Survey, ecuation modelling. LISREL	147 firms
77	(Dhanaraj, Lyles et al., 2004)	Managing tacit and explicit knowledge transfer in IJVs: the role of relational embeddedness and the impact on performance	Journal of International Business Studies	Learning of tacit knowledge (using 3-item scales that look at marketing know-how, managerial techniques) and learning of explicit knowledge (technology and management and procedures)	Business-related knowledge (marketing know-how, managerial techniques, procedural manuals) transferred from the foreign parent to the (local) IJV.	To investigate how relational embeddedness between the foreign parent and international joint venture (IJV) managers influences the type of knowledge transferred to the IJV, and the influence of tacit and explicit knowledge on IJV performance.	Results show the importance that tie strength, trust, and shared values and systems play in the transfer of tacit knowledge, especially for mature IJVs. Findings suggest that tacit learning is accumulative, assists in explaining explicit knowledge, and is enhanced by social embeddedness. It is also found that the influence of transferred tacit knowledge on IJV performance stems principally from its indirect effect on the learning of explicit knowledge	Organizational Learning, economic sociology	QT. Yes	Private	Hungary	7 sectors: Various	Survey data & in-depth inverviews. Correlation & regression	5 interviews (8 IJV), 138 IJV (63 young- 75 mature)

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
74	(Zeitz, Mittal et al., 1999)	#NAME?	. + Strong connection to the network facilitates adoption. + Horizontal communication and differentiation (structural conditions), + High need for novelty or change. + Cultural and ideological readiness to adopt a practice. is facilitated by strong. + Culture: the existence of strong values and beliefs that are matched by important cognitive and normative propensities of actors. + Regulative pressures: The greater the amount of regulative and coercive pressures supporting a practice, the greater the duration of the practice. + Technical and rational elements The greater the measurement of performance effects, assuming 'the effect' are perceived to be positive, the greater the duration of a practice and its ability to resist pressure to change.	NE	. + Training and the tranmission of beliefs, values and technical information helps imitative propensity and entrenchment	Well-entrenched practices 0) address the deep aspects of an organization; (2) involve every level of the orgmization; (3) are driven by a need for congruency between the organization and its environment; (4) are affected by external and internal stakeholders of the organization; and (5) concern technology, financial and legal considerations
75	(Johnston & Blumentritt, 1998)	NE	NE	NE	NE	NE
76	(Simonin, 2004)	NE	. + Learning intent (determination and desire to learn from a partner) shows significant positive effects on knowledge transfer (as well as incentive based learning). partner protectiveness display significant direct negative effects on knowledge transfer.	. - Ambiguity display significant direct negative effects on knowledge transfer. - Tacitness (not partner protectiveness) is significantly related to ambiguity	. + Incentive-based learning capacity is shown to have a greater effect on knowledge transfer than resource and cognitive-based learning capacity	NE
77	(Dhanaraj, Lyles et al., 2004)	. + Relational embeddedness (defined as degree to which 'commercial ties are embedded in social attachments' between the parent and the IJV) and measured by tie strength, shared systems & trust has a stronger influence on the transfer of expl tacit knowledge than on the transfer of explicit knowledge for mature IJV (less to young IJV).	NE	. + Explicit knowledge transferred from the foreign parent is found to have a positive impact on performance in IJV. ? However there was a NEGATIVE & SIGNIFICANT relationship between tacit knowledge and performance	. + The transfer of tacit knowledge has a positive impact on the transfer of explicit knowledge and this effect strengthen over time	NE

Appendix A2. Systematic Review: Descriptive analysis of the literature

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
78	(Bjorkman, Barner-Rasmussen et al., 2004)	Managing knowledge transfer in MNCs: the impact of headquarters control mechanisms	Journal of International Business Studies	Dep. variable was outward transfer of subsidiary knowledge (multi item construct calculated as the total sum of of scores reported in questions asking to rank the extent to which the subsidiary's distintintive competences within five business activities had been used by other units)	Outward interunit (from subsidiary to other units) transfer of general management, manufacturing, marketing and sales, service, and R&D knowledge	To explore the impact of organisational mechanisms on inter-unit knowledge flows in multinational corporations (MNCs)	Findings indicate that MNCs can influence inter-unit knowledge transfer by specifying the objectives of the subsidiary and by utilising corporate socialisation mechanisms. However, no support is found for the hypothesised impact of management compensation systems and the use of expatriate managers on the extent of knowledge transfers from foreign subsidiaries to other parts of the MNC.	Agency theory & socialization theory	QT. Yes	Private	Finland & China	NE	Structured interviews using questionnaires. Correlation and regresion	134
79	(Ipe, 2003)	Knowledge Sharing in Organizations: A Conceptual Framework	Human Resource Development Review	Knowledge creation, share and use	Knowledge sharing inter-individual	To identify the factors that affect knowledge sharing between individuals	The paper builds a framework that defines 3 groups of factors that affect knowledge sharing: the nature of knowledge (tacit and explicit), motivation to share (internal factors such as power and reciprocity and external factors such as relationships with recipients and rewards for sharing) and finally opportunities to share (purposive learning channels and relational learning channels).	Knowledge sharing	T. Yes	NA	USA	NA	NA	NA
80	(Minbaeva & Michailova, 2004)	Knowledge transfer and expatriation in multinational corporations: The role of disseminative capacity	Employee Relations	Knowledge transfer & dissemination (the measure of knowledge transfer as a composite index of various types of knowledge transferred to the focal subsidiary from the headquarters and the sister subsidiaries)	Inter-personal (Knowledge transferred by expatriates from HQ to subsidiaries)	To investigate disseminative capacity in the context of expatriate assingments	It is argued that the degree of knowledge transfer is dependent upon the ability and the willingness of the expatriate to transfer knowledge. Regression analyses showed strong positive effect of the ability of knowledge senders to transfer knowledge on the degree of knowledge transfer, but no significant effect of the willingness on transfer.	AC & expatriation models	QT. Yes	Private	Denmark	NE	Survey. Correlation & regression analyses	92 subsidiaries (30%)
81	(Levin & Cross, 2004)	The Strength of Weak Ties You Can Trust: The Mediating Role of Trust in Effective Knowledge Transfer	Management Science	Knowledge exchange, knowledge tranfer (measured by perceived receipt of useful knowledge)	Inter-personal knowledge transfer (dyadic level)	To investigate the role of ties in facilitating the transfer of knowledge	Findings suggest that the link between strong ties and receipt of useful knowledge (as reported by the knowledge seeker) was mediated by competence- and benevolence-based trust. Second, once controlled for these two trustworthiness dimensions was done, the structural benefit of weak ties emerged. Third, competence-based trust was especially important for the receipt of tacit knowledge.	SNA	QT. Yes	Private	USA, Canada, UK	Pharma, banking and oil & gas	Survey, egocentric techniques & regression analyses	127 respondents (48%)

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
78	(Bjorkman, Barner-Rasmussen et al., 2004)	. + Extensive corporate socialisation mechanisms were associated with more knowledge transferred	NE	NE	NE	. + Performance evaluation that focuses on KT (The higher the perceived importance attached to knowledge transfer by headquarters when evaluating the performance of the subsidiary, the more the knowledge transferred from the subsidiary to other corporate units. ? Compensation systems and number of expatriates were not associated with more knowledge transferred to other units.
79	(Ipe, 2003)	.+ Trust and the power and status of the recipient are critical in influencing knowledge sharing. Trust is more important as trust facilitates learning and decisions to exchange knowledge. . + Incentives have been found important to encourage knowledge sharing in a variety of settings: intranets, knowledge-networks and KM initiatives. Tangible rewards alone are not sufficient to motivate knowledge sharing among individuals, intrinsic rewards are found in the work itself.	. - If individuals perceive that power comes from the knowledge they possess, it is likely to lead to knowledge hoarding instead of sharing. Power politics is therefore an important aspect of knowledge sharing in organizations. + Reciprocity: can facilitate knowledge sharing if individuals see that the value-add to them depends on the extent to which they share their own knowledge with others. Receiving knowledge from others stimulates a reciprocal flow of knowledge. + Culture is reflected in the values, norms, and practices of the organization, thus norms and practices that advocate individual ownership of knowledge severely impede the process of knowledge sharing within the organization.	. - Tacitness of knowledge is an impediment to the sucessful sharing of knowledge. + Explicit knowledge that is rationalized (general, context-independent, standardized, etc) is more easily transferrable than embedded knowledge (context-dependent and narrowly applicable). +/- Valuable knowledge produces contradictory incentives to be shared. If it is linked to status, career prospects and individual reputations may be shared. If it has high commercial value and becomes the source of potential value to the organization, individuals may be reluctant to engage in knowledge-sharing activities.	.+ Opportunities to share knowledge are both purposive learning channels that provide individuals with a structured environment in which to share knowledge (primarily explicit) and relational learning channels that allow the building of trust and "relational embeddedness" which is often the more widely used channel of communication.	Two areas for further research are identified (1) research related to the nature of knowledge in organizations and (2) research related to the knowledge-sharing process and factors that influence this process.
80	(Minbaeva & Michailova, 2004)	. + Strong positive effect of the ability of knowledge senders to transfer knowledge on the degree of knowledge transfer	NE	NE	NE	NE
81	(Levin & Cross, 2004)	NE	NE	. + Competence-based trust is more important to the receipt of useful knowledge when that knowledge is tacit than when it is explicit	. + Strong ties did have a positive and statistically significant overall effect on receipt of useful knowledge (in a separate analysis no interaction effect between tie strength and tacit knowledge was detected, contrary to Hansen's (1999) findings). + All four conditions were met for demonstrating that benevolence- and competence-based trust mediated the link between strong ties and perceived receipt of useful knowledge. After controlling for competence- and benevolence-based trust, it is weaker ties—more so than stronger ones—that lead to the receipt of useful knowledge.	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
82	(Pak & Park, 2004)	A Framework of Knowledge Transfer in Cross-border Joint Ventures: An Empirical Test of the Korean Context	Management International Review	Knowledge transfer (measured by the degree of learning and captured as in peoples' answers to questions that ask them how much them have learnt') and AC (measured by academic background, technical capacity, education programs, financial support for new ideas, etc)	Inter-company (IJV) transfer of NPD & manufacturing process skills	To examine the determinants of knowledge transfer from multinational firms to local joint ventures	Results indicate that between the two types of knowledge transfer, a positive social interaction between partners was accentuated in a transfer of more tacit knowledge. Attributes of knowledge and absorptive capacity were confirmed for an effective transfer of knowledge within the context of international joint ventures.	Knowledge transfer	QT. Yes	Private	Korean partners of US, Japan & Europe MNE	Various	Survey. Correlation & regression analyses	91(47.7%)
83	(Lofstrom, 2000)	Absorptive capacity in strategic alliances: invesigating the effects of individualsÆ social and human capital on inter-firm learning	Organization Science Winter Conference. Keystone, Colorado	Interfirm learning (firm learning or the extent to which individuals gain knowledge that can benefit the firm has been measured by the post hoc production of patents or expert assessment and captured by capture the level of learning that occurred which key individuals felt was beneficial to their firm)	Alliances (inter-orgational) for developing medical device technologies	To investigate the relationships between variations in individuals' networks and knowledge and the firm's ability to learn in alliances	The results of this study support a framework that includes social and human capital as predictors of learning in alliances. This study shows that variations in human and social capital exist across alliances and these differences matter for explaining and understanding learning in alliances. Specifically, this research suggests that the knowledge and networks of key individuals have distinct effect for learning in alliances, when controlling for other factors. Adding the factors of individualsÆ networks and knowledge increases our understanding of what leads to learning in alliances.	Network theory and AC	QT. Yes	Private - Public	USA	Medical devices, pharmaceuticals & biotechnology	Survey. Multiple regression	215 key individuals (82%) and 82 alliances (39%)

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
82	(Pak & Park, 2004)	.+/- Conflict was found to have a significant and negative effect on KT in NPD but not significant in the transfer of manufacturing processes. +/- experience of the MNE in alliances had no significant effect on degree of KT.	. + Higher levels of AC (measured as an average of five items regarding the academic background, technical capacity, education programs, financial support for new ideas, and overseas training opportunities) had a significant and positive effect on KT	. + The effect of the specificity of knowledge on KT was negative and significant. However codifiability had no significant effect. + Desirability was positively (and significantly) associated with KT.	NE	NE
83	(Lofstrom, 2000)	NE	. + Networks that are rich in non-redundant ties (provide access to a greater range of new, unique and different info) positively influence learning. + Strong ties (trust in one's contact) is positively related to firm learning. + The competence of key individuals is an important predictor of learning.	. + Knowledge complementarity (human capital or expertise) is positively related to interfirm learning	NE	NE

No	Ref.	Title	Journal	Knowledge and learning processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
84	(Matusik & Heeley, forthcoming)	Absorptive Capacity in the Software Industry: Identifying Dimensions that Affect Knowledge and Knowledge Creation Activities	Journal of Management	Knowledge creation and assimilation (developed questions for respondents to evaluate on seven point Likert-type scales. E.g. INDIVIDUAL ABSORPTIVE CAPACITY evaluates the percentage of employees in the programming area who have information on state of the art technical practices, necessary skills to complete technical tasks, a shared vision of what the programming area is trying to achieve, a common style of communicating, and technological competence to absorb new knowledge. The measure of KNOWLEDGE CREATION evaluates how often individuals in the software development area discuss items such as new features, products, technical routines or procedures, documentation, and communication patterns within and across the programming area.	Inter-organization technical knowledge transfer	To contribute to the clarification of the construct of AC and due to the rich multidimentionality of the construct, disaggregate it and focus on how absorptive capacity affects knowledge and knowledge creation.	PRIVATE FIRM KNOWLEDGE is positively related to 'relevant public industry knowledge' (H2a) and knowledge transfer structures and routines (H3a) not related to the porosity of the firmÆs boundaries (H1a) or to the level and absorptive ability of individuals (H4a). KNOWLEDGE CREATION is highly correlated to the porosity of the firm's boundaries (H1b) and individuals absorptive abilities (H4b). However knowledge creation is not related to 'relevant public industry knowledge in the firm' (H2b) nor to knowledge transfer structures and routines (H3b). GAPS in the lit: (1) lack of consistency across studies of absorptive capacity in measuring the construct. (2) empirical studies to date do not capture the rich theoretical arguments and the multi-dimensionality of the construct. A limitation of the study is to explain how ideas that are generated get implemented.	The resource-based view	QT. Yes	Private	USA	High-tech (software development)	Survey. Correlation, ordinary least square (OLS) regression	293 (resp. rate 33%)
85	(Hansen, 1999)	The Search-Transfer Problem: The Role of Weak Ties in Sharing Knowledge across Organization Subunits	Administrative Science Quarterly	Knowledge sharing, Knowledge search, knowledge transfer.	Intra-organizational (inter-unit) technical knowledge in NPD	To explain the role of weak ties in sharing knowledge across organization subunits in a multiunit organization, combining the concept of weak ties and the notion of complex knowledge	Findings show that weak interunit ties help a project team search for useful knowledge in other subunits but impede the transfer of complex knowledge, which tends to require a strong tie between the two parties to a transfer. Having weak interunit ties speeds up projects when knowledge is not complex but slows them down when the knowledge to be transferred is highly complex.	Social network and product innovation	QT & QL. Yes	Private multinational	USA	Electronics & computing	Archival, survey and inteview data (R&D and project managers). Descriptive statistics, correlation and hazard rate analysis.	1 firm, 41 divisions, 120 new product development projects (85%)
86	(Birkinshaw, Monteiro et al., 2004)	Knowledge Flows Within Multinational Corporations: Why Are Some Subsidiaries Isolated? AIM Research Working Paper Series	AIM Research Working Paper 008	Knowledge flows (inflow and outflow) measured as the frequency of (1) transfers of products and services and (2) transfers of marketing practices from/to subsidiaries and HQ	Intra-firm (HQ-Subsidiary) transfer of marketing capabilities and intelligence	This paper seeks to explain why some subsidiaries are isolated from the knowledge transfer activities within multinational corporations.	Results highlight that subsidiaries with strong learning capabilities are more likely to send knowledge to the rest of the organization. Empirical support is found suggesting that units more likely to receive knowledge are those similar, in terms of certain characteristics, to the unit sending the knowledge. Performance implications are discussed and results indicate the existence of a liability of internal isolation" to the extent that, all other things equal, isolated subsidiaries have a lower performance than those subsidiaries that usually receive and send knowledge within the multinational corporation	MNC, knowledge transfer, social psychology (in-out-group literature)	QT. Yes	Private	Sweden	Various (Pharma, automotive...)	Pilot interviews & survey	7 interviews, 171 subsidiaries (87%) and 22 (88%) corporate managers of 6 major MNC

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
84	(Matusik & Heeley, forthcoming)	NE	DIMENTIONS (1) the firm's relationship to its external environment (porosity of firm boundaries). Including: the number and type of ties. (2) Collective knowledge which is formed by 'component' knowledge (discrete aspects of the firm's operations like relevant public industry kw that is simmilar and complementary) and 'architectural' (structures, routines and knowledge bases that enhances the ability to route information to the appropriate areas or people beyond structured transfers. Related experience and transactivfe memory. (3) individuals's absorptive abilities (prior learning experiences and problem-solving capabilities) an degree of knowledge sharing. R&D intensity R& D spending, Firm profitability and size.	NE	NE	Contextual variables: conducive knowledge context with items related to team structures, formal appraisal systems, employee feedback, rewards for sharing information, coordination across departments, cooperation, easy relationships within the firm and a positive attitude towards knowledge acquisition
85	(Hansen, 1999)	NE	. + Weak interunit ties help a project team search for useful knowledge in other subunits but impede the transfer of complex knowledge (strong ties are less likely to provide redundant knowledge). + Strong ties are required between the two parties to transfer	.- Complexity of knowledge (level of codification and knowledge that is independent from other components)	NE	NE
86	(Birkinshaw, Monteiro et al., 2004)	. + The closer a focal subsidiary is to the MNC's headquarters the higher the vertical knowledge inflows to that subsidiary.	. + Learning capabilities (Market orientation) of subsidiaries has a positive and significant effect on vertical knowledge outflows (to the HQ) but not significant horizontal knowledge flows (to other subsidiaries). + The higher the knowledge outflows from a focal subsidiary, the higher the knowledge inflows TO that subsidiary. + The higher the unit's market orientation, the higher the horizontal knowledge inflows to that unit and outflows from that unit.	NE	NE	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
87	(Nieto & Quevedo, 2005)	Absorptive capacity, technological opportunity, knowledge spillovers, and innovative effort	Technovation	Identify, assimilate and apply knowledge. AC is measured using items related to the following categories: (1) communication with the outside environment, (2) level of know-how and experience in the organization, (3) diversity and overlaps in the knowledge structure and (4) strategic positioning.	Absorption of general technology-related knowledge	To explore the relationship between 2 classes of variables manerial (absorptive capacity) and structural (technological opportunity and knowledge spillovers) in the innovative effort of firms	AC is found to have the greatest explanatory power in the innovative effort of firms followed by technological opportunity. Furthermore it is supported that AC exercises a moderating effect over the impact of technological opportunity (but not spillovers) on firm's innovative effort. Thus it is argued that managerial variables (eg AC) are more important in determining the innovative effort than structural/contextual variables. An index of AC is developed putting together significant factors that can be classified into 4 groups: (1) communication with the outside environment, (2) level of know-how and experience in the organization, (3) diversity and overlaps in the knowledge structure and (4) strategic positioning.	AC	QT. Yes	Private	Spain	Various	Survey. Regression analyses	406 firms
88	(Carlile, 2004)	Transferring, Translating, and Transforming: An Integrative Framework for Managing Knowledge Across Boundaries	Organization Science	Transferring, translating, and transforming knowledge	Inter-group (new product development), intra-organizational	To examine managing knowledge across specialised domains when innovation is a desired outcome. Three knowledge processes are explored as well as their requirements to occur	Three properties of knowledge are found to be critical to explain knowledge processes: difference (in amount or type of knowledge), dependence (between two parties to meet a goal) and novelty (of the context). These properties point at three different approaches to manage knowledge across boundaries: transferring (differences and dependencies are known), translating (novelty generates differences and dependencies that are unclear) and transforming (novelty generates different interests between actors).	NE	QL. Yes	Private	USA	Automotive	Case study. Interviews	1 (7 interviews)
89	(Sheen, 1992)	Barriers to scientific and technical knowledge acquisition in industrial R&D	R&D Management	Knowledge acquisition by knowledge scanning (funtional, informal and formal). Inward diffusion of knowledge. Firms ability to comprehend the significance of the knowledge offered and integration processes.	Knowledge acquisition, intra-organizational transfer technical knowledge (medical, bio)	To describe how industry perceives and makes use of external expertise and to explain how firms in practice gain access to external scientific and technological information	The paper argues that there is a gap in our understanding of how technological information is acquired and integrated especially at the development stage of innovation. Two main barriers are found: resources and capacity for knowledge acquistion and intellectual capability. The paper argues that the practice of science is the accumulation of skills, and while scientific facts may be universally accesible (codified knowledge), working methods are not.	Knowledge transfer (industry-university)	QL. Yes	Private	UK	Pharmaceuticals	Interviews	6 firms, 71 group and 13 individual interviews
90	(Sung & Gibson, 2005)	Knowledge and technology transfer grid: empirical assessment	International Journal of Technology Management	Creation, sharing, implementation, commercialisation (measured by items related to the 16 variables mentioned)	Inter-firm technological knowledge	To define knowledge and technology transfer and categorise the levels of transfer. To explore factors that affect knowledge and technology transfer. To develop a knowledge and technology transfer grid to provide practical guidelines.	16 research variables are identified as affecting the process and results of knowledge and technology transfer. Survey results showed that this variables in descending order of importance are: Person-to-person contacts. Concreteness of technology. Understanding nature of business. Push and pull for technology. A sense of common purpose. Knowing whom to contact. Provide incentives for transfer. Programmes (training, demo, tutorials). Clear definition of transfer. Increase awareness of transfer. Variety of communication channels. Share success stories. Attitude and values. Set up transfer office or committee. Product champion. Cluster analysis indicate four key factors to accelerating knowledge and technology transfer: Communication, Distance, Equivocality, and Motivation. Data analyses show that there are four distinctive clusters that demosntrait contrasting characteristics in terms of these four factors.	Technology transfer	QT. Yes	Private for profit R&D consortia	USA	Computer and semiconductor technologies	Survey, factor & cluster analysis	146 (34%) respondents

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
87	(Nieto & Quevedo, 2005)	NE	. + The following factors are positively correlated: Awareness of competitors' technologies. Awareness of customer needs. Staff skills. Investment in training. Capacity for technological development. Capacity to adapt technologies from other sources. Range of staff training. Effort put into development of new products. - Negatively correlated are: High level of technological specialization, Effort put into cost reduction, Noteworthy economies of scale	NE	NE	NE
88	(Carlile, 2004)	NE	Transferring -domain specific knowledge -: based on information processing theories the challenge is to increase processing capacity. A common lexicon is necessary. Translating: aim is to create learning and shared meaning creating new agreements. Transforming: focuses on develop common interests to share and assess knowledge. Requires political and practical effort .	NE	NE	NE
89	(Sheen, 1992)	NE	.- Internal communication across scientific disciplines. - Lack of formal mechanisms for diffusing knowledge. - Lack of awareness of processes of knowledge transfer. - Utilisation of external infomation sources to develop a personal power base. - Lack of intellectual capability	.- Tentions between "quick fixes" and deeper understanding of fundamental scientific problems	.+ Linking processes of acquisition, comprehension and integration	NE
90	(Sung & Gibson, 2005)	Disctance factors: A sense of common purpose , Understanding of nature of O.C business , Increase awareness of transfer	. + Motivation factors: Provide incentives for transfer, Share success stories, Push and pull for technology, Product champion.	Equivocality factors: Concreteness of technology, Establish collaborative research programmes, Clear definition of transfer, Programmes (training, demos...)	. + Communication factors: Person-to-person contacts Knowing whom to contact .Variety of communication channels	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
91	(Leseure, Bauer, et al., 2004)	Adoption of promising practices: a systematic review of the evidence	International Journal of Management Reviews	1) Initiation and adoption decision, 2) Set-up or adaptation, 3) Implementation, 4) Ramp-up, 5) Integration or use	Adoption of promising practices	The objective of the study was to gather empirical evidence to understand the adoption of promising practices and to explain why the UK rate is lower compared to competitors.	The systematic review acknowledges the vast amount of literature that can inform the topic of the review. It is also recognized the varied conceptualizations, operationalizations and measurement of adoption failure and success. In order to overcome this difficulty, a systematic approach is taken devising a frame of reference focusing on the process of adopting and absorbing administrative practices. A 5 stage (or episode) is built covering 1) Initiation and adoption decision, 2) Set-up or adaptation, 3) Implementation, 4) Ramp-up, 5) Integration or use. These processes are explored in more detail below. The review concluded that though an adoption gap exists in the UK, no evidence about the root causes of this gap can be found, but generic causes of poor adoption.	NE	T. Yes	NA	UK	NA	NA	NA
92	(Gupta & Govindarajan, 2000)	Knowledge flows within multinational corporations	Strategic Management Journal	Knowledge transfer (asking respondents about the extent to which the subsidiary engaged in transfers of knowledge and skills of (1) marketing know-how, (2) distribution know-how, (3) packaging design/technology, etc .... and AC (operationalized in terms of : (1) mode of entry -a determinant of the subsidiaryÆs ex-ante familiarity with the corporate-wide knowledge base) and the proportion of local nationals vs. expatriates within the subsidiaryÆs top management team (a measure of the interunit homophily of subsidiary managers).	Intra-organizational transfer of largely procedural types of knowledge (e.g., product designs, distribution knowhow, etc.), MNC- subsidiary transfers	To investigate intracorporate knowledge transfers within multinational corporations (MNCs)	The following predictions are supported (i) knowledge outflows from a subsidiary would be positively associated with value of the subsidiarys knowledge stock, and the richness of transmission channels; and (ii) knowledge inflows into a subsidiary would be positively associated with richness of transmission channels, motivational disposition to acquire knowledge, and the capacity to absorb the incoming knowledge.	AC, MNC	QT. Yes	Private	USA, Europe and Japan	Various	Survey	374 (38%) subsidiaries within 75 MNCs
93	(Carlile & Rebentisch, 2003)	Into the Black Box: The Knowledge Transformation Cycle	Management Science	Storage, retrieval and transformation	Inter-organizational (joint venture) and Intra-organizational (new product development)	To examine how knowledge is integrated in complex technology and product development settings and to present how knowledge integration is a process that requires adaptation and transformation.	The paper outlines a knowledge transformation cycle that comprises storage (accumulation of knowledge from past transformations), retrieval (searching for and assessing relevance) and transformation (resolving the consequences and creating solutions). Three aspects are presented as key to understand the transfer and integration of knowledge: novelty, dependence and specialization	Knowledge transfer theories	QL. Yes	Private	USA	Various	Summary of 2 published studies	128 cases of technology transfer & 1 ethnography
94	(Bapuji, Crossan et al., 2005)	Organizational learning: methodological and measurement issues	International Conference on Organizational Learning and Knowledge	Organizational learning	Intraorganizational. Organizational learning	To review existing literature on organizational learning to identify the most common themes, methods and approaches in the field.	The authors rise the issue of OL moving into diverse directions arguing that OL is a complex construct spanning multiple levels of analysis. The paper shows that in quantitative studies, the most common dependent variable is "performance", followed by "learning", "innovation", "product development". Independent variables range from customer satisfaction, aspiration levels, R&D intensity, creativity, etc. Qualitative studies tend to focus on themes such as knowledge creation and transfer and learning processes. This disparity of themes suggests OL researchers are studying different phenomena under the label of OL. In terms of partitioners paper on OL the numbers suggest that the impact of OL research in practice is uncertain.		T. Yes	NA	Canada	NA	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
91	(Leseure, Bauer, et al., 2004)	ADOPTION DECISION: Both institutional push drivers (regulation, consultants, technology) and need pull (under-performance, crisis, problems) are identified	. + SET UP or ADAPTATION: two tasks are considered critical: the adoption of best practice is subject to their fit with structural properties of the local context, thus adaptation is critical and the adoption must be managed as a strategic change innitiative (defining objectives, planning, funding...)	IMPLEMENTATION: the execution of the practice is largely influenced by the extent to which commitment for implementation is secured and training is given	RAMP-UP & USE: attention to individual-level issues such as awareness, mindsets, allegiances, behaviours... with a balance between focus and flexibility	INTEGRATION & USE: elements where emphasis could be placed are persistence, embeddedness of the new practice in organizational routines, retention of the practice
92	(Gupta & Govindarajan, 2000)	. +/- Motivational disposition (measured by network vs. subsidiary based incentives for the subsidiary president) had no significant effect on knowledge outflow or inflows (operationalization issue?) from peer subsidiaries. However, if measured as the economic advantage of the country of the subsidiary vs. the parent, motivational disposition of subsidiaries located in countries with a lower economic level show greater level of inflows.	.+/- AC was operationalized in terms of mode of entry and proportion of local nationals in the subsidiary top management team. Its effect on inflows was mixed	. + Value of the knowledge stocks (measured by mode of entry in the MNC and size) had a significant positive effect on knowledge outflows to both peer subsidiaries and parent corporation.	. + Transmission channels (operationalized in terms of formal integrative mechanisms and lateral socialization) had a significant positive effect both on ouflows - both to peers & MNC- and inflows of knowledge	NE
93	(Carlile & Rebentisch, 2003)	NE	.- Dependencies across the groups constrain the generation of solutions to novel situations requiring that groups adapt and interact to achieve a common solution.	.- Specialization: as the amount of specialization increases, the interdependencies between groups generate negative consequences	NE	Novelty of the context (new demands)
94	(Bapuji, Crossan et al., 2005)	NA	NA	NA	NA	NA

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
95	(Easterby-Smith, Graca et al., 2004)	Absorptive capacity in practice: an empirical examination of Zahra and George's model	International Conference on Organization al Knowledge, Learning and Capabilities	Z & G's model: acquision, assimilation, transformation and exploitation	Intra-organizational knowledge transfer	To explore and expand Zahra and George's model of absorptive capacity testing it against qualitative data drawn from case study material of three organizations.	The following aspects are highlighted as important findings from the paper. Most empirical papers have adopted survey desings. This study confirms to a great extent Z & G's model. There are some areas where the original model can be extended. (1) Competitive advantage can be achieved even when there are low regimes of appropriability, (2) The timings for the knowledge flows are important: what is available and when. (3) Political issues are most relevant to the conversion of potential into realized absorptive capacity as they influence what info is accessible, and whose views and knowledge become 'legitimized'. (4) Proactivity is a requirement for turning potential AC into realized AC, as organizations do not absorb information without effort. (5) Not only innovation but also external competition are the triggers for AC.	RBV and AC	QL. Yes	Private & public	UK	IT, Chemicals and health care	Case study	3
96	(Liebeskin d, Oliver et al., 1996)	Social networks, learning and flexibility: sourcing scientific knowledge in new biotechnology firms	Organization Science	Internal & external knowledge sourcing, Knowledge acquisition (measured by joint company-research institutions publications)	Inter-organizational, inter-individual transfer of scientific knowledge	To examine how two highly successful new biotechnology firms (NBFs) source their most critical input-scientific knowledge	Results indicate that scientists at the two NBFs enter into large numbers of collaborative research efforts with scientists at other organizations, especially universities. Formal market contracts are rarely used to govern these exchanges of scientific knowledge. Findings suggest that the use of boundary-spanning social networks by the two NBFs increases both their learning and their flexibility in ways that would not be possible within a self-contained hierarchical organization.	Social networks	QT. Yes	Private	USA	Biotechnology	Co-authorship of scholarly publications (10 years), interviews, patenting data	2 firms
97	(Kostova, 1999)	Transnational transfer of strategic organizational practices: A contextual perspective	Academy of Management Review	The tranfer of a practice (the success of a transfer is conceptualized as the institutionalization of the practice at the recipient unit= implementation + internalization)	Transnational transfer of strategic practices within MNCs	To examine the phenomenon of the transnational transfer of strategic organizational practices within multinational corporations	It is proposed that 3 sets of factors at 3 levels - country, organization, and individual - affect transfer success reflecting social, organizational, and relational embeddedness. Social context comprises institutional distance between the repient and the home firms' country. organizational context comprises the organizational culture in terms of favorability for learning and change and the relational context include commitment, identity and trust	Primarily Institutional theory	T. Yes	NA	USA	NA	NA	NA
98	(Szulanski, Cappetta et al., 2004)	When and How Trustworthiness Matters: Knowledge Transfer and the Moderating Effect of Causal Ambiguity	Organization Science	Trustworthiness, causal ambiguity, etc. were measured with items related to them. (No measure of KT)	Intra-organizational transfer of technical & administrative practices	The major purpose of this paper is to identify a moderator, causal ambiguity, which delineates the conditions as to when and how a recipient's perception of the trustworthiness of a source affects the effectiveness of the transfer of organizational practices.	Our main finding is that the extent to which, on balance, the perceived trustworthiness of the source contributes to the effectiveness of intrafirm knowledge transfer depends on the nature of the knowledge transferred. Specifically, the accuracy of such transfers is moderated by the causal ambiguity of the knowledge.	Knowledge and technology transfer	QT. Yes	Private	USA	Various: petrochemical, IT, Communicatio ns, etc.	Survey. Correlation and regression	271 observation s of 122 transfers of 38 internal best-practices in 8 companies
99	(Huang & Newell, 2003)	Knowledge integration processes and dynamics within the context of cross functional projects	International Journal of Project Management	Knowledge integration is "an ongoing collective process of constructing, articulating and redefining shared beliefs though the social interaction of organizational members (p.167).	Intraorganizational	To examine the dynamics of knowledge integration in the context of cross-functional project implementation within four large organizations. Specifically, the research focuses on exploring and conceptualizing the efficiency, scope and flexibility of knowledge integration.	Knowledge integration in the context of cross-functional project implementation is in essence a process of engaging organizational members through the promotion of project benefits and the management of social networks. Findings also reveal that an organization's embedded practices, past integration experience and social capital plays a key role in shaping the level of coordination that in turn influences the efficiency and scope of integration. In particular, the development and nurturing of social capital within and beyond the project team is crucial, as is the promotion of project awareness through the creation of common knowledge		QL. Yes	Private	UK	Banking, engineering, retailing, oil	Comparative case study using observation, semi-structured interviews, informal dialogues.	4

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
95	(Easterby-Smith, Graca et al., 2004)	NE	.+/- Political issues. + Proactivity.	Regimes of appropriability	Timings for the knowledge flows	Regarding future research, the authors suggest that "more work needs to be done on understanding the inner processes of absorptive capacity and that it would be most profitable to do this using longitudinal and qualitative methods. Indeed, we feeel that it would be premature to devote further resources to definitional and measurement issues until we have far better understanding of the features we are trying to measure" (p.23)
96	(Liebeskind, Oliver et al., 1996)	. + Very few contractual or formal arrangements were done for sourcing scientific knowledge, and only, thus they relied on scientist to increase learning, thus governed by the norms of scientific social network	NE	NE	. + The nature of the external collaborations was primarily "prospective" rather than long stablished relationships that produced numerous research publications	. + Over the period studied neither the rate of research collaborations (publications) not the property rights of scientific discoveries declined
97	(Kostova, 1999)	. - Institutional distance between the countries of the recepient and the parent company is negatively associated with the sucess of transfer. Institutional characteristics include regulatory (rules & laws), cognitive (schemas, frames, representations) and normative (values & norms) aspects.	. + Organizational culture of the recipient that favours learning & change will be positively associated with success of transfer.	. + Compatibility between the values implied by the practice and the values underlying that unit's organizational culture.	. + The commitment of the transfer coalition at the recipient unit to the parent company, (b) the identity of the transfer coalition with the parent company and (c) the trust of the transfer coalition in the parent company are positively associated with the success of the transfer	. + The perceived dependence of a recipient unit on the parent company will be positively associated with the implementation but not internalizafion of the practice that is being transferred to that unit.
98	(Szulanski, Cappetta et al., 2004)	. + Trustworthiness has an intricate effect on transfer, as promotes both functional and dysfunctional processes, fostering receptivity on the one hand and lessening the perceived need for vigilance. When causal ambiguity is high, trustworthiness may prove counterproductive.	NE	. + As causal ambiguity increases, the effect of the perceived trustworthiness of the source on the accuracy of the transfer weakens progressively and then becomes negative.	NE	NE
99	(Huang & Newell, 2003)	NE	.+ Organizational routines that reduce the need for communicating the explicit knowledge. + Direction which enables the communication between specialists by codifying tacit knowledge into explicit rules. + EFFICIENCY of integration: depends on the extent to which common knowledge exists between participants, the level of coordination and organizational structure. + FLEXIBILITY is determined by an organization's capacity for reconfiguring existing knowledge as a means of promoting continous innovation.	.+ SCOPE of integration refers to the level of complexity underlying the integration of differentiated knowledge.	NE	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
100	(Hislop, 2003)	Knowlege integration processes and the appropriation of innovations	European Journal of Innovation Management	Reconfiguration and integration (internal knowledge). Utilization (external knowledge)	Intraorganizational	To examine the appropriation of innovations through the integration of internal and external knowledge	External knowledge provided only limited understanding to the innovation process. The reconfiguration and integration of internal knowledge is as important as the extent to which external knowledge is utilised. The paper emphasises the distributed nature of organizational knowledge that is embedded in practice and in the socio-cultural context within which it occurs. It also highlights knowledge fragmented entity and the processes of social interaction required for effective integration.	Activity -based perspective & social nature of knowledge	QL. Yes	Private	UK, France & Sweden	Manufacturing (mechanical), insurance	Longitudinal (1.5-2 yrs) case study. Semi-structured interviews	5 organizations
101	(Ciborra & Andreu, 2001)	Sharing knowledge across boundaries	Journal of Information Technology	Knowledge creation, transformation, transfer and sharing	Intra-organizational and inter-organizational knowledge sharing	To develop a framework linking knowledge processes in three different contexts: single firm, allied firms and a web of interdependent organizations	Three main firm level learning loops are identified: (1) a basic loop routinizes work practices and, indirectly, routines while using resources (routinization learning loop), a (2) second one combines work practices and organizational routines in order to form capabilities (capability learning loop) and the (3) third gives meaning	NE	T. Yes	NA	UK & Spain	NA	NA	NA
102	(Argote, McEvily et al., 2003)	Managing Knowledge in Organizations: An Integrative Framework and Review of Emerging Themes	Management Science	Knowledge management and OL (does not differentiate the two) transfer (and others)		To provide an integrative framework for organizing the literature on knowledge management.	The framework is organised into 2 set of dimentions. Knowledge management context (including the properties of units -source and user-, properties of the relationship, and properties of knowledge) and knowledge management outcomes (creation, retention and transfer).	NA NA	T. Yes		USA	NA	NE	NA NA
103	(Tsang, 1999)	The knowledge transfer and learning aspects of international HRM: an empirical study of Singapore MNCs	International Business Review	Knowledge diffusion	Intrafirm knowledge transfer MNC	To theoretically examine the knowledge transfer and learning aspects of international human resource management and evaluate IHRM practices	Expatration has an important function of knowledge transfer and learning. However the companies in the study generally failed to take into account this funcion, not deriving the full benefits from international assingments	Knowledge transfer & learning	QL. Yes	Private	China	Manufacturing	Interviews	12 firms, 67 interviews (23 in headquarters, 17 among expatriates, 27 in subsidiaries)
104	(Gherardi & Nicolini., 2000)	To Transfer is to Transform: The Circulation of Safety Knowledge	Organization	Constitution, circulation and institutionalization of knowledge seen as a process of knowledge translation.	Intraorganizational	Taking a social constructionist view of knowledge, the purpose is to explore the manner in which organisational knowledge circulates and how it is transformed (translated) in the process of circulation.	Following a constructionist view of knowledge, organisational knowledge is conceptualised as situated in the system of ongoing practices, relational and mediated by artifacts, rooted in a context of interaction. This knowledge is mostly acquired through some form of participation in a community of practice and continually reproduced and negotiated, hence it is dynamic and provisional. Knowledge artifacts are negotiated to incorporate actors' practical knowledge. The constitution, circulation and institutionalization of knowledge take the form of a process of traslation which connects the local to the global, the practice to the theory. This translation process is one aspect of the social process of organising, and thus part of the object 'organisation'. Organisational knowledge and organising are therefore tightly interrelated.	Social constructionist view of knowledge (knowing) and actor network theory as opposed to the diffusion model.	QL. Yes	Private	Italy	Construction	Observational methods	NE
105	(Sparkes & Miyake, 2000)	Knowledge transfer and human resource development practices: Japanese firms in Brazil and Mexico	International Business Review	Dissemination, transfer and absorption	Intraorganization (MNC)	To delineate human resource development practices that enhance knowledge transfer	Both on the job and off the job training constitute best practice to enhance knowledge transfer though findings are inconclusive as to their relative merits. Close monitoring of these practices will likely enhance the transfer of knowledge. A variety of human resource management aspects influence the level of HRD: the level of education, wages and turnover rate	Human capital theories as precursors of competitive advantage	QL. yes	Private	Brazil & Mexico	Manufacturing (lean production, TPM, Quality Circles & kaizen practices)	Case study (methods NE)	9

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
100	(Hislop, 2003)	NE	.+ The reconfiguration and integration of internal knowledge is as important as the acquisition of external knowledge	NE	.+ Socially-based knowledge integration mechanisms	NE
101	(Ciborra & Andreu, 2001)	NE	. + Knowledge management systems are useful at the routinization learning loop to help transfer embedded routines througout the organization. + Training and education to freeze capabilities into standard ways of operating. + Boundary spanning roles to mix external	NE	NE	In progress
102	(Argote, McEvily et al., 2003)	. + Status of the source is found to predict knowledge transfer across individuals, the likelihood of acquisition and the degree of kw exchange	.+ Individuals embedded in a dense web of third party connections + To belong to the same parent organization. + The ability (training), motivation (rewards and incentives) and opportunity (trial and error, learning by observation or informal networks) to create, retain and transfer knowledge.	.- Tacit knowledge that is difficult to articulate. - Causal ambiguity. + External knowledge may be more valued than internal knowledge if it elevates member's status. + Commonly held knowledge more likely to be repeated and used.	. + Characteristics of the diadic relationship: three aspects of the relationship between the social units are highlighted: intensity of connection, contact frequency, and social similarity. PATTERN of relationship: + belonging to a dense web of thrid-party connections, common owership of stablisments. + Embedded ties are more suitable for transferring private knowledge (often complex and not articulated). + Weak ties aid in the search of new knowledge .+ Trust alleviates concerns of appropriation and misuse.	Unconclusive evidence is found (though their importance recognized) for the following factors: informal networks and KT, network posititions, formal organizational structure (integrated vs. centralized), culture. The FIT between properties of knowledge, units, relationships, and the environment predicts knowledge management outcomes.
103	(Tsang, 1999)	.+ Direct communication between the headquarters (source) and subsidiary by visits, meetings. + Frequent communication. + Rotation of expatriates. + Training	.+ Sharing of knowledge among the subsidiaries in the same country	NE	NE	NE
104	(Gherardi & Nicolini., 2000)	NE	. + Network actors that ignore, alter, deviate, supplement or appropriate knowledge. +/ - Power to influence the incorporation of practical knowledge into knowledge artifacts.	.+ Alingment between knowledge artifacts and knowledge discourses. + Knowledge that is put to work by situated actors in situated work practices and in local interpretations.	. + Translation processes that are created by authors in relational networks through interactions.	NE
105	(Sparkes & Miyake, 2000)	NE	.+ The level of education when entering the company. + High wages (influences turnover). + Low turnover (if complex tasks)	.+ Training on problem solving and teaching "why" rather than just "how" fosters knowledge assimilation	NE	NE

No	Ref.	Title	Journal	Knowledge and learnign processes	Type of engagement in knowledge	Purpose	Key findings	Theoretical framework	T.	Type of organi-sation	Cntry	Sector or industry	Methods	Sample size
106	(Darr & Kurtzberg, 2000)	An Investigation of Partner Similarity Dimensions on Knowledge Transfer	Organization al Behavior and Human Decision Processes	Knowledge trasfer (decreased production costs)	Inter-unit business-related knowledge transfer	To investigate the conditions under which partner similarity enhances knowledge transfer, in particular 3 dimensions of similarity: business strategy similarity, customer similarity and partner proximity	Only strategy similarity (firms that shared simmilar strategies and problems) facilitated knowledge transfer (not customer similarity or partner proximity). Knowledge transfer was measured in terms of the decreased production costs. Transfer has occurred when a contributor shares knowledge that is used by an adopter	Attraction (due to simmilarity) for knowledge transfer	QT & QL. Yes	Private	UK	Pizza delivery franchises	Quantitative modellling (nonlinear maximun-likelihood regression), interviews, observations and diaries	41 stores, 33 interviews, 13 observations
107	(Major & Cordey-Hayes, 2000)	Knowledge translation: a new perspective on knowledge transfer and foresight	Foresight	Knowledge transfer, knowledge translation (-1- collection, collation and summarization, -2- translation and interpretation, -3- assimilation & commitment)	Intra-organizational (NE)	To develop a knowledge transfer or knowledge flow cycle.	3 key processes are outlined 1-collection, collation and summarization, -2- translation and interpretation, -3- assimilation & commitment	Knowledge transfer	T. Yes	NA	UK	NA	NA	NA

No	Ref.	People (source) enablers/barriers	People (user) enablers/barriers	Content enablers and barriers	Practices enablers and barriers	Other enablers and barriers
106	(Darr & Kurtzberg, 2000)	.+ Business strategy similarity. - Customer similarity. - Partner proximity	NE	NE	NE	NE
107	(Major & Cordey-Hayes, 2000)	NE	NE	. + Discrete and tangible knowledge that can enable firms to take immediate actions	NE	NE

Appendix B. Interview Guide

Hello, good morning/afternoon. As part of the project team X/MCCentre Steering Group I would like to talk to you about the research project(s) X. In particular, I would like to have your views on how we conducted the project and the process of dissemination. I would also like to ask you a few questions about its content and the people who participated in the projects and the related activities.

I would like to record our conversation for research purposes. All that we say will remain confidential. Once I analyse all the data and reach some conclusions I will be pleased to share them with you.

BACKGROUND
1. Could you briefly tell me about your professional and educational background?
2. Briefly, what is your present role within MCompany?
3. Why do you think MCompany became involved in the X project?

Show chronology of the collaboration here

PRACTICES
4. Are there any key events missing?
5. What were the events that made a difference? Or what where the turning points?
6. Why did MCompany became involved in the MCCentre/Research project
7. How did the 'internal politics' change over time?
8. In your opinion to what extent were the project(s) successful?
9. What were the milestones from your perspective?
10. What were the key enablers at each stage?
11. What were the key barriers at each stage?
12. Do you think the contents of the projects were communicated enough? / exploited enough? If yes how and when
CONTENT
13. Briefly, how would you describe the findings of the research?
14. How could the outcome of the research be improved?
PEOPLE
15. Participants: Who were involved in the project? (both from MCompany and Cranfield)
16. Roles: What were their roles? (Your interpretation of their roles).
       How would you describe your role in the program?
       What were the things that you found most difficult to manage?
       What were the best things in that job?
17. Level of involvement: What was their level of involvement?
18. Motivations and incentives: What do you think were their motivations and incentives in relation to the project?
19. Level of influence /effectiveness in their roles:
       How influential do you think they were in the context of the project?
       How effective you think they were in their role?
20. Relationships
       How often and for what reasons do you communicate with this people?
       What was your relationship like with each of the participants?

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Appendix C. Table of Documents

The following table contains an indexed and organised summary of all the documentary evidence used in the thesis. The following information is included:

- No: indicated the number of document.

- Date: the date to which the document refers. If the event that the document refers to is different from the date of the electronic file the latter is indicated in parenthesis.

- File name: name of the electronic file or hard copy.

- Type of document: the documents have been classified following a logical structure of levels of analysis (MCompany, MCCentre, projects) and the nature of the document (planning document, meetings, outputs, etc).

- Pgs: number of pages.

- Description: brief explanation of the contents of the document.

- Comments: relevant observation and summary of the contents.

- By: person or persons who produced the document.

- In: refers to the physical or digital location of the document.

1. MCompany and MPCompany

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
1.	01/10/2000	3Cs initiatives (hard copy)	MCompany & MPCompany	5	Internal initiative's brochure	Clients, commercial, culture	All	1
2.	31/12/2000	Annual review 1999-2000 and Report & Accounts (hard copy)	MCompany & MPCompany	54	Explains key facts and strategic activities	Outlines key business operations	All	1.
3.	31/12/2000	Annual review 2000 (hard copy)	MCompany & MPCompany	27	Explains key facts and strategic activities	Outlines key business operations	All	1.

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
4.	31/12/2000	Business Consultancy Prospectus 2000 (hard copy)	MCompany & MPCompany	4	Business consultancy brochure	Outlines key approaches to consulting	All	1.
5.	31/12/2001	Annual review 2000-2001 (Hard copy)	MCompany & MPCompany	28	Explains key facts and strategic activities	Outlines key business operations	All	1.
6.	01/01/2002	In touch with modern local government (hard copy)	MCompany & MPCompany	9	Brochure explaining the services of the LG team	6 key areas of services are described	All	1.
7.	25/06/2002	2002 06 25 MCompany prospectus.pdf	MCompany & MPCompany	115	Comprehensive document prepared as part of the admission onto the stock exchange	Contains the history of the company as well as key background information	All	1.
8.	31/12/2002	2002 12 31 MCompany Report & Accounts 2002.pdf	MCompany & MPCompany	41	Report and accounts 2002	Contains key figures about the group	All	1.
9.	31/01/2003	2003 01 31 MCompany Interim Report.pdf	MCompany & MPCompany	20	States the accounts and achievements of the semester.	Overall a record profit in both turnover and profit has been achieved	All	1.
10.	21/07/2003	2003 07 21 MCompany organisation chart.jpeg	MCompany & MPCompany	1	MCompany organisation chart	Helps understand MCompany's operations	All	1.
11.	01/01/2004	2004 04 01 MP corporate plan 2004.pdf (12/12/2005)	MCompany & MPCompany	8	Sets out the group strategy and its key areas of action	Key document	All	1.
12.	01/01/2005	Corporate Social Responsibility report 2005 (Hard copy)	MCompany & MPCompany	12	CSR brochure	Details areas where MPCompany is focused	All1	1.
13.	31/07/2005	Report and accounts (Hard copy)	MCompany & MPCompany	72	Annual report and accounts	Contains a brief summary of both turnover and profit figures for the period 2000-2005	All	1.
14.	01/09/2005	Mprint. Newsletter Autumn 2005 (Hard copy)	MCompany & MPCompany	8	Quarterly newsletter	Offers details of the latest news across the company	All	1.

SMoLTA Research

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
15.	28/02/2000	2000 02 28 Findings exploratory Infr. Mngmt.doc	SMoLTA Outputs and reports. Internal doc.	5	Infrastructure Management. MCompany/Cranfield. A first draft report from exploratory searching across the broad domain of Infrastructure Management	It is like an scoping study of initial relevant issues in the area of infrastructure management.	A7	2.C
16.	10/05/2000	2000 05 10 SMoLTA report v3c DT.doc	SMoLTA. Outputs & reports. Version of Report	84	The Strategic Management of Long Term Assets. Challenges to excellence.	One of the latest versions of the SMoLTA report	A6, A7	3.C.
17.	01/12/2000	2000 12 01 Payments SMoLTA report.xls	SMoLTA. Meetings & comms -	1	Payments made to produce the SMoLTA report	Payment made to external and internal people	A6	3.A
18.	29/01/2001	Strategic questions for Managers	SMoLTA – Events: Further development	1	New strategic questions relevant to the company to ask to their clients.	Questions drawn from discussions with clients	A7	3B
19.	14/02/2001	Prog Report- MC - SMoLTA questionnaire.doc	SMoLTA. Outputs & reports. Progress report	3	Delivering excellence in the management of long term infrastructure assets. Feedback from internal discussions	Detailed comments on a SMoLTA draft. Worth a Overall: well written and informative. The question is where we are going to take this now.	A7	3A Print
20.	14/03/2001	MCRCinfoDBinns.doc	SMoLTA –Outputs & reports. Press release	1	Delivering Excellence in the Management of Long Term Infrastructure Assets	Brief column explaining SMoLTA report	A7	3C
21.	27/6/2001	SMoLTA launch invitation Letter.doc	SMoLTA Events – Invitation	1	The MCompany-Cranfield Centre for Infrastructure Management Launch Dinner. 12th September 2001	A1 and SoM Director of the School´s invitation to participate in the event at St Ermins Hotel, Caxton St, London. Launch of SMoLTA	A7	3B
22.	08/08/2001	Report Distribution list.xls	SMoLTA Comms	1	Lists few people from the Company and Cranfield who have received a copy the SMoLTA report	Few people from MCompany participated in SMoLTA that were external	A7	3A
23.	14/08/2001	Draft outline for introductory presentations.doc	SMoLTA – Events: speeches.	1	Draft outline for introductory presentations for the MCompany-cranfield centre launch 12 September 2001	Presenters were: A1, the director for SoM (Leo Murray) and A6	A7	3B
24.	15/08/2001	MCC & SMoLTA Launch.ppt	SMoLTA – Events: Presentation	14	The MCompany Cranfield Centre for Infrastructure Management. Launch Dinner. September 12th 2001	Presentation by A6 on the SMoLTA research	A6, A7	3B
25.	03/09/2001	MCC & SMoLTA Launch v2.ppt	SMoLTA – Events: Presentation	8	The MCompany Cranfield Centre for Infrastructure Management. Launch Dinner. September 12th 2001	This presentation is much clearer, focuses on the key messages and uses the new Cranfield SoM template	A6, A7	3B Print
26.	05/09/2001	M-C Guest List 12-09-01.xls	SMoLTA – Events: List of attendees	1	Attendees: company clients, people from the company and Cranfield.	Aprox. 31 were expected to attend: 20 clients, 4 SoM and 7 people from the Company	A6	3B
27.	06/09/2001	draft outline for introductory presentations v2.doc	SMoLTA – Events: speeches.	2	Draft outline for introductory presentations for the MCompany-cranfield centre launch 12 September 2001	This draft is completed with all the messages that A1, A6 and Leo Murray will give.	A7	3B

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
28.	06/09/2001	MCompany-Cranfield Launch Dinner Programme.doc 06/09/2001	SMoLTA – Events: Programme.	1	MCompany-Cranfield Centre Launch Dinner . 12th September 2001 PROGRAMME for the EVENING	The agenda for the event is detailed	A7	3B
29.	11/09/2001	M-C Guest List 12-09-01 v2.doc	SMoLTA – Events: List of attendees	1	MCompany - Cranfield Centre for Infrastructure Management: Launch Dinner Guest List	A newer and confirmed list of attendants	A7	3B
30.	11/09/2001	MCompany Cranfield launch release v3 doc	SMoLTA - Press release	2	"Failure free" infrastructure the only way forward, says MCompany-Cranfield research	A newer version of the SMoLTA press release written by A7	A7	3C
31.	14/09/2001	MCompany Cranfield launch release v4. doc	SMoLTA - Press release	4	Infrastructure Management Needs An Overhaul, Says MCompany-Cranfield Research	A newer version of the SMoLTA press release with more detailed info of the company, the sectors in which it operates and areas of service	A7	3C Print
32.	01/10/2001	letter to guests after launch MCC 01-10-01.doc	SMoLTA – Events: letter to attendees	1	Letter by A3 and A6 thanking participation to attendees	This letter was sent after the dinner event where the SMoLTA and the MCC were launched.	A7	3B
33.	02/10/2001	M-C CIM Press Document 17-09-01	SMoLTA - Press release	3	The Strategic Management Of Long Term Assets.	A press release announcing that Cranfield School of Management and MCompany have formed a new centre to develop leading edge applied knowledge in infrastructure management.	A7	3C
34.	05/10/2001	Comments from MCC Launch	SMoLTA – Events: Feedback	2	Feedback from the launch dinner event	In a 2-page documents the key aspects of the feedback were summarized containing key questions for CEOs and operational / organisational issues	A7	3B Print
35.	30/11/2001	Comments from MCC Launch v2	SMoLTA – Events: Feedback	3	Feedback from the launch dinner event	In a 3-page documents the key aspects of the feedback were summarized containing key questions for the company and CEOs and further divided into operational / organisational issues	A7	3B Print
36.	03/12/2001	denis t questions 02-12-01	SMoLTA – Events: Feedback	1	Actions on feedback gathered at the launch event	A document/ letter that states: we are conducting a short research study to clarify some of the issues raised at the launch dinner. We are concerned with the following questions…	A7	3B

MC Centre

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
37.	02/12/1999	1999 12 02 Cranf.-M first proposal.doc	MCC Planning	2	Memorandum of understanding. A letter intended to act as a general memo of understanding and a specific proposal for the first step	Key document. Set the basis for the MCompany-Cranfield School of Management collaboration	A8	2.A
38.	02/12/1999	1999 12 02 MCompany agreement- Memo of understanding.doc	MCC Planning	2	Copy of the first agreement letter	This is the initial document for the collaboration	A8	2.A
39.	01/01/2001	Gantt chart Activities from March2002	MCC Planning	2	Represents in Gantt format the different activities planned for the period March (2002?) – Feb 2003	Interesting to see how many of these activities were actually conducted.	A7	2A
40.	11/01/2001	2001 01 11 Heads of terms MCCentre.doc	MCC Planning	5	The MCompany-Cranfield Centre for Infrastructure Management. Draft heads of terms	Key document. This is one of the first documents that set out the mission and objectives of the centre, advisory board, core staff, management team, location, work program and financial aspects. Three things are worth noting: (1) It is planned that the centre will eventually become a fee earning part of the School. (2) There is a commitment from both parties not to exploit the Centre for financial gain outside its remit. (3) It is anticipated that the first year of operation will require an investment, but … the Centre will break even from year 2.	All	2.A To print
41.	16/03/2001	MCC overview and some issues.doc	MCC Info	3	Towards A Joint Research Centre For The Strategic Management Of Long Term Assets (SMoLTA)	Note that 2 issues are outstanding: 1. The title, mission and objectives of the centre and 2. The operating vision for the centre? Whose activity is it?. Contents: 1. Background / Introduction. 2. Aims and Objectives. 3. Research Issues. 4. Compatibility with other research centres. 5. Benefits of the proposed research centre. 6. The Way Forward / What are the Challenges?	A7	2B
42.	19/03/2001	Actions MCC Steering group meeting 19 03 2001 & v2	MCC Meeting	5	Minutes/Actions MCC Steering Group meeting held on 19th March 2001	A comprehensive document detailing the vision and mission of the centre. It also outlines resourcing, operating procedures, the research programme, dissemination strategy, etc. Attended: A1, A2, A8, A6	A7	2B

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
43.	01/04/2001	2001 04 01 MCompany-Cranfield agreement (19/07/2002)	MCC Planning	6	It is the document that specifies the agreement between Cranfield SoM and MCompany for the establishment of the research centre. Agreement effective from 1 April 2001	Key document. Contents include (numbers indicate paragraph number): 1. Overall aims. 2 Advisory board. 4 Commitment to second a research fellow and an annual contribution. 6 Acknowledgement of Cranfield employees to advance knowledge. 7 Acknowledgement of MCompany employees to further the company's commercial activities. Also contains the mission of the centre	A2 A8	2A Printed
44.	09/04/2001	Actions MCC Steering group meeting 9 04 2001	MCC Meeting	3	Minutes/Actions MCC Steering Group meeting held on 9 April 2001	Contains a good number of comments and extensive background discussion as well as details of the launch event. Attended: A2, A6, H8B, A7	A7	2B
45.	20/04/2001	MC Brochure.doc	MCC Info - Brochure	3	The MCompany Cranfield Centre for Infrastructure Management	A brief 2 columned leaflet outlining the aims of the centre and the SMoLTA results	A7	2B
46.	11/05/2001	MCompany Cranfield launch release & v2 doc	MCC. Outputs and reports - Press release	3	"Failure free" infrastructure at odds with efficiency, says MCompany-Cranfield research	A draft of a press release	A7	2D
47.	13/05/2001	MCC 3 year plan & dissemination strategy.doc	MCC Planning	16	The MCC Towards a 3 (alternative 5) year strategy. Outputs / dissemination plan: An overview	Key document. Contains a detailed dissemination strategy covering a different number of mechanisms and the specifics of these mechanisms.	A7	2A
48.	17/05/2001	Actions Steering group meeting 17 05 2001	MCC Meeting	2	Minutes of the Steering Group Meeting 17 May 2001 and MC CIM Update as of 24th May 2001	Contents: a number of decisions were made, amongst others to agree the strategy for the MCC, in particular the vision, mission and aims and objectives. See document "MCC Towards a 5 year strategy". Attended: A6, A7, A2	A7	2B to p
49.	17/05/2001	Agenda Steering Group Meeting 17 May 2001	MCC Meeting	1	Agenda.	The agenda is about issues to be resolved: 1. The budget and funding arrangements (The contract - Clause 4). 2. Dissemination of the research findings (The contract - Clause 12). 3. References to the Association (The Contract - Clause 14).	A7	2B
50.	17/ 05/2001	MCC Towards a 5 year strategy	MCC Planning	13	The MCompany - Cranfield Centre for Infrastructure Management: Towards A Five-Year Strategy. A discussion document for the MC CIM Steering Group Meeting 17 May 2001	KEY paper summarizing what the MCC has achieved so far and its intended outcomes for the next 5 years. Outlines areas of research, resources needed, etc.	A7	2A to p
51.	13/06/2001	2001 06 13 MCC Brief overview.doc	MCC info	2	The MCompany-Cranfield Centre for Infrastructure Management	Intro, vision, mission, key objectives, research program and outputs	A7	2B Print
52.	02/07/2001	Web site Plan2.doc	MCC info-	8	The MCompany-Cranfield Centre for Infrastructure Management	Proposed map and structure of the MCC web. States 4 resources projects which are: • Exploring of new models of partnering, alliancing and contract management. • High reliability organisational design principles and the management of change. • E-business, virtuality and new business models. • Developing financial and functional models to better explore the value of long term assets.	A7	2B

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
53.	18/07/2001	MCC review progress Jan-Jul 2001 & diss strat.doc	MCC Planning	2	Reviews progress on the period March 2001 to July 2001	Interesting document that reports a meeting with Financial Dynamic who provided objectives for each client group including: 1.To draw attention to MCompany as an insightful authority of infrastructure issues. 2. To highlight MCompany's specialist expertise in certain sectors. 3. To maximise the opportunities available to MCompany. Alternatives of how to achieve this are outlined.	A7	2A
54.	27/07/2001	Agenda & update Steering group meet 31 07 2001.doc	MCC Meetings	12	The document contains an agenda together with a detailed update and background information on each item. To be used on the steering group meeting 31.07.2001	The items and information are: 1.PhD student – update. 2. Launch Event – update. 3. The Research Forum - (Define forum member roles and responsibilities / Agree cost and terms of membership). 4. Thought Leadership Sessions - its relationship with the MCC. 5. Other Outputs (Website / training / publications). 6. Priorities for the research for the rest of year one. 7. Diagram of progress and the research programme.	A7	2AA
55.	31/07/2001	Actions Steering group meeting 31 07 2001	MCC Meeting	2	Brief notes and actions following the MCC Steering group meeting 31 / 07 / 2001	The key issues discussed at this meeting were: Recruitment of PhD Student, SMoLTA, Launch event, websites and Research Programme (where it was agreed that DD should concentrate on partnering and failure free infrastructure. The PhD student would pick up the failure free infrastructure theme in year two). Attended A2, A6, A7, A9	A7	2B
56.	18/09/2001	MCompany Away Day2 18-09-01.ppt	MCC – Presentations and info	13	The MCompany Cranfield Centre for Infrastructure Management. MCS 'Away Day'. September 20th 2001.	Presentation done by A7 at the Away day 20 September 2001 (themed Working with and understanding key clients') outlining key findings from SMoLTA and the MCC. Interesting the graph with all potential activities for thought leadership.	A7	2B Print
57.	25/09/2001	2001 09 25 Thought leadership activities diagram.doc	MCC Planning	1	Features a mind map type diagram of the activities that thought leadership could be turned into.	Quick way of seeing and explaining different mechanisms to turn 'thought leadership into action'	A7	2A
58.	02/10/2001	Actions Steering group meeting 02 10 2001.doc (13/10/2001)	MCC Meeting	3	Actions and Meeting Notes from Steering group meeting on the 02-10-01.	Attended: A1, A6, A2, H8B, A10, A7, Javier Marcos. Contents: 1 The forum and related activities. 2The next stage of the research. 3 Growing the Centre. 4 MCompany Managers Event? 5 Press / Public Relations / Intranet / Website.	A7	2AA
59.	02/10/2001	Agenda & update Steering group meet 02 10 2001.doc	MCC Meetings	12	The document contains an agenda together with a detailed update and background information on each item. To be used on the steering group meeting 02.10.2001	Items on the agenda are: 1. Feedback from the launch. 2. Follow up activities - guest letter / those that did not attend. 3. The forum. 4. Press / Public Relations. 5. The next stage of the research. 6. The next events - for clients? 7. MCompany Managers Event? 8. Intranet / Website. 9.PhD - Javier Marcos	A7	2AA

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
60.	05/10/2001	2001 10 05 MCompany-Cranfield media list 2.doc	MCC Outputs: list of media	2	List of potential journals, magazines and journals with contact names	Useful as a starting point to implement an external dissemination strategy	A7	2D
61.	26/10/2001	2001 10 26 Pj and Managd services Key Client list.doc	MCC Events: Key clients	2	A list of key clients as at 26th October 2001	Contains the key client manager at the company	A7	2C
62.	27/10/2001	Actions Steering group meeting 27 10 2001	MCC Meeting	2	Meeting Notes from the MCC Steering group meeting held on 27-10-2001 in West Hall	Contents: an update from Cranfield; MCompany. In this update A2 informs of the new structure comprising: Managed Services (Director: P19), Project Services (Director H10) and Management Consultancy (Director A2). It is noted that MCompany is still in transition and key strategic issues need to be resolved within the Company regarding where it positions itself. Attended: A2, A6, A7, A10	A7	2B to p
63.	27/10/2001	Agenda Steering group meeting 27-10-2001.doc (28/11/2001)	MCC Meetings	1	Agenda for the Steering committee to be held on 27 October 2001	Contents: 1) MCompany - Cranfield Links and research themes. 2) Planning for the manager's workshop. 3) Planning the manager's event. 4) Client Event. 5) 2 day Conference on High Reliability in September 2002 may not be feasible. To replace client event on High Reliability. 6) Short term secondments.	A7	2AA
64.	09/11/2001	MCC INVITATION-LIST Mangrs Event 24-25 Feb 2002.doc	MCC Events: list of attendees	3	A list of people attending and those potential candidates to attend to the Managers Event held at Cranfield CMDC on the 25 and 26 Feb. 2002	Contains detailed structure of the company with names of relevant people	A7	2C Print
65.	15/11/2001	2001 11 15 Research Plan Q4 2001.doc	MCC Planning	3	An outline of different short term activities for the MCC	Details what the plans are for actions such as the 2nd Client Event (20 March 2002), Management event (26 Feb 2002) and how to involved staff in thought leadership.	A7	2A
66.	03/12/2001	MCompany Away Day 5&6 Dec 2001.ppt	MCC – Presentations and info	14	The MCompany Cranfield Centre for Infrastructure Management. MCS 'Away Day' December 5-6th 2001	Presentation done by A7 at the Away day themed 'Developing leading edge applied knowledge in infrastructure management'. Includes a nice overflow of the MCC, feedback from the launch dinner and a revised research plan.	A7	2B print
67.	13/12/2001	MC Invitation Letter A for 20March2002 event	MCC Events – Invitation	1	The MCompany-Cranfield Centre for Infrastructure Management Dinner event following SMoLTA and MCC launch. 20 March 2002	Administrative doc.	A7	2C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
68.	07/01/2002	Agenda Steering Group Meeting 17 Jan 2002	MCC Meeting	1	Agenda for the MCC Steering group meeting.	Items: 1.Background to MCompany and the MCompany - Cranfield Centre. 2. Growing the Centre. 3. Research Update - Paper for American Academy of Management / Interviews. 4. Managers Workshop. 5. Managers Event. 6. Client Event. 7. Major Projects Association - Change management seminar. 8. Local government / public services conference / seminar	A7	2B to p
69.	11/01/2002	Strategic Questions On Business Infrastructure Assets.doc	MCC Events – Key questions for clients	1	Strategic Questions On Business Infrastructure Assets	A page with a set of questions to stimulate reflection and feedback	A7	2C
70.	14/01/2002	Managers Workshop 22Jan2002.ppt	MCC Events - presentation	19	MCompany Manager's Workshop held on January 22 2002.	Nice presentation covering an intro for the MCC, Strategic Infrastructure Management, (A6), Highly Reliable Public Service Organisations / Failure Free Infrastructure. (A6) and Outsourcing, Partnering and Issues Relating to Identity. (MB). The QUESTION for the workshop was: ¿How would you apply The High Reliability Model to the in your service sector? This is the FIRST time HRO ideas are explained with certain level of detail and with examples and pictures.	A7	2C Print
71.	17/01/2002	MCompany - Cranfield Overview Jan2002	MCC Info	3	The MCompany-Cranfield Centre for Infrastructure Management	Provides an updated view of the centre with revisited aims and objectives.	A7	2B
72.	18/01/2002	Managers Event Programme - CMDC 25&26 Feb02	MCC Events - Programme	1	The MCC for infrastructure management. Senior management event 25th and 26th february 2002. Programme	Outlines the agenda for the event, which includes among others: A2, A6, Ex CEO of London Underground (TBC), County Property Manager, Kent County Council.	A7	2C
73.	21/01/2002	Breakout groups process for MCC workshops	MCC Events – Programme	1	Outlines how to break people into groups and collect feedback	Doc to see some practices at different events.	A7	2C
74.	21/01/2002	Programme Managers Workshop 22-01-02	MCC Events - Programme	1	The MCC for infrastructure management. Senior management event 22 Jan 2002. Programme	Includes A7 (: Developing 'High Reliability' public services), A6, A2, and Dr Michael Butler (Partnering / outsourcing and issues relating to identity)	A7	2C
75.	21/01/2002	Workshop 22 Jan 2002 invite List	MCC Events – List of attendees	2	A list of people attending and those potential candidates to attend to the Managers Workshop held at Cranfield 22 Jan 2002	Contains detailed structure of the company with names of relevant people	A7	2C
76.	22/01/2002	Actions Steering group meeting 22-01-2002.doc (23/01/2002)	MCC Meetings	5	Actions and Meeting Notes from Steering group meeting on the 22-01-2002.	Contents: 1. Introduction - MCompany Cranfield Centre Update. 2 Strategic Questions for CEOs / Directors. 3 High Reliability. 4 Partnering / outsourcing and identity. 5 MCompany Managers Event? Attended: A1, A6, A2, A12, H8B, P19, A10, A11, A7, H10, A13, A14, A15	A7	2AA

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
77.	22/01/2002	Present to Snr Managers Workshop 22Jan2002.ppt	MCC Events	46	Presentation given at the Senior Managers Event. 22 Jan 2002 West Hall.	Colourful presentation with plenty of images on HRO. It makes a note on Growing the Centre: 1 Involvement of the key senior staff in the research programme. 2 Involvement of staff in developing MCompany's best practice.	A7	2C
78.	24/01/2002	MC Brochure Draft 24-Jan-02	MCC Info	2	The MCompany-Cranfield Centre for Infrastructure Management	Provides an updated view of the centre in leaflet format	A7	2B
79.	14/02/2002	MCC update & work programme Feb2002.doc	MCC Planning	7	The MCC progress report. Period covered 01-02-2001 to 13-02-2001.	The purpose of this report is to document the work undertaken on the MCC. It also proposes a short/medium term work programme and is intended to stimulate discussion / ideas regarding the long term aims and objectives of the project.	A7	2A to p
80.	15/03/2002	Acceptance list to event 20 March 02	MCC Events – List of attendees	2	A list of people attending the client event held on the 20 March 2002	Contains company names and who invite who	A7	2C
81.	20/03/2002	A6 presentation Event 20-03-02	MCC Events – presentation	7	The Strategic Management of Long Term Assets: Overview of the centre and some further research	Explains A6's algorithm and the questions The Strategic Management of Long Term Assets: Why should I be bothered and what should I do about it?	A7	2C
82.	20/03/2002	Dick Wilkinson-BedsCC event 20March02	MCC Events – presentation	12	The Strategic Management of Long Term Assets: The case of Bedford County Council	The presentation given by the speaker	A7	2C
83.	20/03/2002	Guest List by Name for events	MCC Events – List	3	A list containing a number of clients who could potentially be invited	Admin doc.	A7	2C
84.	20/03/2002	Programme Client event 20-March-02	MCC Events – Programme	1	The MCompany - Cranfield centre for infrastructure management. Dinner 20th march 2002. Programme for the evening	Programme of the nigh intervening: A1, A6, and Dick Wilkinson, Deputy Chief Executive, Bedfordshire County Council to talk about "The strategic questions faced by senior infrastructure managers"	A7	2C
85.	23/04/2002	Gantt chart Activities from March2002 v2	MCC Planning	2	Newer version of a similar document. Represents in Gantt format the different activities planned for the period March (2002?) – Feb 2003	Interesting to see how many of these activities were actually conducted.	A7	2A
86.	29/04/2002	HIGH RELIABILITY Conference Oct-Nov 2002	MCC Events – HRO Conference	3	The 'High Efficiency High Reliability' Paradox: Designing Public and Private Organisations For A 'Failure Free' Future? A MCompany-Cranfield Thought Leadership Event October / November 2002	It is a short briefing outlining the Thought Leadership Conference on HRO (this conference never took place)	A7	2C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
87.	02/05/2002	Agenda Steering Com & MCC Update 02May 2002 v2 (07/07/2006)	MCC Planning	18+1	The MCC Update. It is a comprehensive document outlining the progress so far and the next steps for the centre.	Key document. Contains: 1. MCompany-Cranfield Centre: Where are we now? 2. MCompany-Cranfield Events: Where do we want to be? 3.MCompany-Cranfield Events: Feedback. 4. MCompany-Cranfield Guest List: Who are the additional targets? 5. An evidence based approach to management knowledge. 6. Short term research projects and outputs (risk management, corporate social responsibility, supply chain management, performance measurement). 7. High Reliability Thought Leadership Event. 8. Sector events and outputs (Rail, education, local government, defence, highways, waste etc). 9. Visiting fellows / professors: Who would be suitable? 10. Finance / funding: budget required for year 2. 11. Brochure. AOB. Attended: A2, A10, A11, A6, A7	A7	2AA Print
88.	22/05/2002	Budget Jun 2001-May 2002	MCC Planning	2	Estimated costs incurred by the company and Cranfield in the development of the MCC	Admin document	A7	2A
89.	01/06/2002	EPSRC bid document June 2002.doc	MCC Planing	9	The IMRC 19 grant proposal	Key document. This research grant facilitated the 5 key projects at the MCCentre.	A6, A7	2A
90.	12/06/2002	Amendment to budget contract-June 02.doc	MCC Planning	2	Letter from A2 to A8 to note a slight change in the wording of the contract. Contributions remain the same.	Admin document	A2	2A
91.	25/06/2002	Man Cons Team Away Day Agenda 26-27th June 02	MCC Presentations	1	An agenda with the items and program of the management consulting team	Not directly related to the MCC activity but it is worth noting.	A7	2B
92.	26/06/2002	Presentation Man Consult Away Day 26-27 June 2002	MCC Presentations	14	The MCompany - Cranfield Centre for Infrastructure Management. Management Consultancy Away Day. 26 & 27 June 2002	A7's presentation containing The MCompany - Cranfield Centre one year on, Research themes – update, short term research projects, future events and evidence-based approaches to policy and practice. This is the first time evidence-based practice is introduced.	A7	2B Print
93.	28/06/2002	Man Con Action Plan Away Day 26-27th June	MCC Meetings	12	Management Consulting Away Day 26 & 27 June action plan	A detailed action plan of a number of things is outlined. Useful document to make 'thought leadership reality'	A7	2B print
94.	04/07/2002	Agenda Steering group meeting 04 Jul 2002.doc	MCC Meetings	2	Agenda for the Steering committee to be held on 04 July 2002	Contents: 1 Proposal to EPSRC. 2 DD's position / replacement. 3 Research Plan / timetable (attached). 4 Thought Leadership Event (High Reliability). 5 Javier Marcos (PhD update)	A7	2AA

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
95.	22/07/2002	Steering Group Meeting 25July02	MCC Presentations	14	The MCompany - Cranfield Centre for Infrastructure Management. Steering group meeting. 25th July 2002	The presentation contains among others The MCompany - Cranfield Centre one year on, Research themes – update, Short term research projects, Evidence-based approaches to policy and practice and future events. To note that the way in which the HRO forum will work is presented and the contributions from the different organisations is pictured.	A7	2B printed
96.	25/07/2002	Presentation to Steering Group Meeting 25Jul2002.ppt (22/07/2002)	MCC Meetings	10	Presentation to the Steering Committee Meeting on the 25th July 2002.	Outlines few areas of activity. 1 Evidence-based approach: what is it and why should we use it? Offers the possibility to conduct 4 systematic reviews in addition to existing MCC work.	A7	2AA
97.	27/08/2002	Approach conduct Forums and SRs.doc	MCC Planning	1	Developing Management Knowledge Using Systematic Review. Description of the Approach	Outlines the phases of systematic review and how it will work within the MCompany context	A7	2A
98.	02/10/2002	Actions Steering group meeting 02 Oct 2002	MCC Meeting	3	Meeting Notes from the MCC Steering group meeting held on 02-10-2001 in West Hall.	Contents: 1. The forum and related activities. 2. The next stage of the research. 3 Growing the Centre. 4 MCompany Managers Event. 5 Press / Public Relations / Intranet / Website. Attended: A1, A6, A7, H8B,A10, Javier Marcos	A7	2B
99.	07/10/2002	MCC structure and functioning	MCC Planning	2	The structure and functioning of the centre is revisited to accommodate the new people involved, among others the PhD researcher. Paper discussed over the period Aug-Oct 2002	This papers re-sets out how to make the most of the resources committed to the centre	A7, A2	2A
100.	17/10/2002	MCC Brochure Draft 17-10-02	MCC Info - Brochure	2	The MCompany Cranfield Centre for Infrastructure Management	A brief text outlining the aims of the centre and the MCC to be used in a brochure	A7	2B
101.	18/10/2002	Approach conduct Forums and SRs v2	MCC Planning	2	Developing Management Knowledge Using Systematic Review. Description of the Approach	Outlines the 5 phases of how to conduct the projects but in more detail: planning, conducting the review, reporting, dissemination, utilisation	Javi	2.A
102.	18/10/2002	MCompany-Cranfield responsibilities	MCC Planning	3	MCompany-Cranfield Centre ROLES AND RESPONSIBILITIES chart as at October 2002 (draft for discussion)	This is a KEY document. Differentiates tasks into the following categories: Strategy, Resource Management, Research Projects, Marketing / PR / Brand development, Management Development, Product Development. Besides, it differentiates the roles as: Director (MCompany), Director (Cranfield), Research Fellow (MCompany), Research Fellow (Cranfield), Researcher (Cranfield), PhD Student (Cranfield / EPSRC), Marketing (MCompany), Support Services (MCompany / Cranfield), Others (MCompany / Cranfield)	A7	2A

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
103.	21/10/2002	Agenda Steering Group meeting 21 10 2002	MCC Meetings	1	Agenda for the Steering Group meeting held on the 21 October 2002 in the Guerritte Room (West Hall)	The items for the agenda were: 1.Outputs/Deliverables, for the Centre – discussion. 2.MCompany-Cranfield Implementation Paper – Action Plan (paper). 3. Implementation Plan for Core groups (paper). 4.Research methods – end products – discussion. 5. Role and Job Spec for M-C Researcher (paper). 6. M-C Events Calendar. 7. Marketing/communication with client members. 8. M-C brochure and leaflet and other marketing materials (paper). 9. Client Forum and dinner on the 20th November.	A7	2B
104.	28/10/2002	MCC proposal research teams for projects.doc	MCC Planning	2	MCC. Implementation of the new structure. Teams for the different forums	Outlines the 5 research projects and the initial people to participate in it. Gives a nice picture of who was initially appointed /invited and is useful to compare who actually participated later on.	A7	2A
105.	15/11/2002	MCompany - Cranfield Communication plan Nov2002	MCC Planning	1	MCompany-Cranfield Communication Strategy Plan	Sets out the idea to have 4 meetings a year, the 5 research forums, the steering group and the communication strategy.	JLS	2A
106.	13/01/2003	Project plan for conducting the SRs.doc	MCC Planning	1	A diagram outlining the process for implementing EBP	The document outlines how the process would work achieving the following phases: 1 Specification of Research Area. 2 Specification of Research Question. 3 Scoping study. 4 Systematic Review. 5 Exploitation / Dissemination	A7	2A
107.	10/03/2003	MCC Structure for the EBP period.doc	MCC Planning	1	A bubbles diagram outlining the structure of the research centre	Features de roles of A2, A5, A6, A7 y J Marcos. Identifies the gap in the MCompany researcher	A7	2A
108.	11/03/2003	2003 03 11 IMRC19 - Steps for systematic reviews.doc	MCC Planning	1	Specifies the steps to be followed in conducting systematic reviews	Each step is clearly defined	Javi	2A
109.	20/03/2003	Job Description MCC Researcher.doc	MCC Planning	1	Job Description for Research Consultant/Fellow the MCompany – Cranfield Centre for Infrastructure Management	To note: "the successful candidate will have a blend of research, project management and consultancy skills. In particular, the ability to develop new ideas, conduct applied research, turn research knowledge created in the MCompany-Cranfield Centre into relevant and useful consultancy tools and disseminate the findings throughout the MCompany"	A7	2A
110.	24/03/2003	MC newsletter_V7	MCC Info - Brochure	8	MCC centre newsletter. Outlines the aims of the centre and the research streams	This version of the newsletter never saw the light	A7	2B print
111.	01/4/2003	MCentre newsletter (Hard copy)	MCCentre. Outputs	4	The first (and last) newsletter published	Contains a brief descriptions of all the research forums	A5	2. D.
112.	01/04/2003	MCompany – Cranfield Centre. The BRiC Project	MCC Outputs	11	MCompany – Cranfield Centre. The BRiC Project, Service Delivery and Construction	A paper outlining the BRiC project (IMRC funded project) in which the company participated.	A7	2B

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
113.	16/05/2003	Agenda - Steering Group -16-05-2003.doc 13/05/2003)	MCC Meetings	1	Agenda for Steering group meeting 16 May 2003	Items: 1 Programme & Progress (General, HRO, PPP, Asset Management, PFI/Funding). 2 Future Subjects. 3 Client Contact. 4 Publicity & Communications	A4	2AA
114.	19/05/2003	A4 descriptive CV	MCC Info	1	A4´s CV	Contains a narrative description of the MCC researcher CV	A4	2A
115.	24/07/2003	2003 07 24 Actions Steering Group.doc	MCC Meetings	1	Actions of the meeting	A summary and overview of the status of the different projects	A4	2AA
116.	24/07/2003	2003 07 24 Agenda - Steering Group.doc	MCC Meetings	1	Agenda for the Steering group meeting 24 July 2003	Contents: 1. Programme & Progress. 2. Client involvement. 3. Cranfield update. 4. Newsletter and website update. 5. Budget 2003-2004	A4	2AA
117.	29/07/2003	2003 07 29 Cranfield support on EBP for Mcompany bid.txt	MCC Other	1	Cranfield School of Management agrees to act as part of a Stakeholders board as specialists in evidence-based practice in a MCompany's bid	Agreement on things of interest for MCompany beyond research	A4	2E
118.	30/07/2003	2003 7 30 Invoice to MCompany.doc	MCC Other	1	Invoice for some activities (Travel, publications, PhD fees)	Admin doc.	A6	2 A
119.	31/07/2003	2003 07 31 SDRN Stakeholder group-Confirmation of Association.doc	MCC Outputs & reports. Follow up activities	1	SDRN Phase II - Stakeholder Board and Policy Theme. Confirmation of Association.	Letter from A6 confirming Cranfield's willingness to become involved in advisory bodies that may be beneficial for MCompany.	A6	2 D
120.	14/10/2003	2003 10 14 Agenda Steering group	MCC Meetings	1	Agenda for the Steering group 14/10/2003	How to tackle the centre's low level of deliverables is discussed.	All	2AA
121.	14/10/2003	MCC process flow.ppt	MCC planning	1	A very illustrative diagram of the work flow that MCC activities could follow.	Specifies 3 steps: Step 1 DIMENSIONALISING (the IMRC 19 Grant), Step 2. Methodology, and Step 3. Product development.	A7	2A
122.	14/12/2003	2003 12 14 Visiting prof address spare slides.ppt	MCC Presentations	16	A3 Presentation at Cranfield.	Key document. Contains interesting figures about the evolution of the business.	A3	2B
123.	27/01/2004	2004 01 27 Field notes Steering group-reduced-meeting.doc	MCC Meeting	3	Some notes taken at a 'reduced' steering group meeting. Held prior to the ICE event at London Euston	Key doc. Evidences the difficulties the centre was going through. Proposes a potential new approach: academic-based research and practitioner-based research.	Javi	2.AA printed
124.	28/01/2004	2004 01 28 A7 comments on Steering group-reduced meeting.doc	MCC Meeting	2	A7 comments on the notes Javi had taken	In a critical tone, the sensitivities of the MCCentre were manifested. A good question is asked, Do we really want to do both practitioner oriented work?	A7	2.AA printed
125.	04/02/2004	Integration of research streams Diagram.ppt	MCC Planning	1	A flow diagram exhibiting an integration of all research activities in a Q & A form.	Key document. Portrays in an incredible simple way how to integrate all the research streams and how all inform important areas of business for MCompany.	A7	2A

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
126.	06/02/2004	2004 02 06 Outputs list.doc	MCC Outputs and reports	3	Lists all the outputs from the MCC	Includes: journal articles, conference papers, workshops, etc	A7 & Javi	2. D
127.	01/03/2004	2004 03 01 Key Lessons Learnt.ppt	MCC Planning	2	A4 summarises lessons learnt from the forums	Key document. Helps understand issues to take into account in the future	A4	2A
128.	18/05/2004	2004 05 18 MCCentre Vision.ppt	MCC Planning	3	The vision of the MPCC. From 'knowledge in the context of application to knowledge into practice"	A useful diagram to explain what the centre is about	A7, Javi	2A
129.	18/05/2004	2004 05 18 MPC Centre Update.ppt	MCC Meetings & agendas	4	A7 briefly explains all the outputs and approach of the centre.	Specifies outputs achieved so far	A7	2AA To use
130.	24/08/2004	2004 08 24 Letter to MP CEO - Alternative model.doc	MCC. Planning	3	The future of the MCCentre. Letter from A6 to the MCompany CEO revisiting the collaborative arrangements.	Key document. Opens up the possibility of working on a project-by-project basis recognising the present difficulties of the centre.	A6	2 A Printed
131.	27/10/2004	2004 10 27 Letter to CEO re close of MCCentre.doc	MCC Planning	1	A6's acknowledgment of the decision to terminate the relationship.	Key document. Leaves the door open for project-based work and the continuation of IMRC grant and PhD work	A6	2A Printed
132.	17/02/2005	2005 02 17 Letter to Mrs Harding.doc	MCC Other	2	Letter to express the sadness after A1's passing	In this emotive letter to A1's wife after his decease, A6 acknowledges A1 commitment and support to the Centre and the value of his contribution	A6	2E
133.	21/06/2005	Outputs list as at June 2005.doc	MCC Outputs & reports	3	Lists all of the outputs including papers, workshops, etc.	Identified outputs add up to 57	A6	2D

Project 1. HRO

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
134.	20/03/2001	2001 03 20 HRO lecture SIMS A9.ppt	Project 1 Outputs and reports. Presentation	48	Modelling the Organisation: The High Reliability Model	Uses HRO thinking for a management course in SIMS	A9	4.1.C
135.	07/09/2002	2002 09 07 HRO Systematic Review Gantt work plan.xls	Project 1. Outputs & reports. SR	2	A Gantt chart specifying tasks for conducting the SR	Follows the A6 & A7 approach to SR	Javi	4.1.C
136.	16/09/2002	High Reliability - Messages & photos	Project 1. Meetings and comms.	7	Failure and the challenges for high reliability organisations	Features some shocking photos such as Hatfield, Concorde, etc	A7	4.1. A
137.	16/09/2002	MC Invitation Letter HRO dinner 20 Nov 2002	Project 1. Events	1	The MCC Centre Dinner on the theme - Failure free Infrastructure – 20th November 2002. Invitation letter	Contains some corrections which shows how difficult it was to phrase the content of the event	A7	4.1.B
138.	21/10/2002	2002 10 21 HRO Meeting SR update slides.ppt	Project 1 Meetings & Comms	11	Presentation of the findings and SR process of High reliability are described	Nice presentation in which the process by which the SR was conducted is outlined	Javi	4.1.A To print
139.	29/10/2002	2002 10 29 Color coding in carriers.ppt	Project.1 Outputs and reports. Internal Presentation	1	Contains photos and an explanation of the different colour codes that operator in a carrier use to enhance visibility	Illustrative example of how to achieve reliability	Javi	4.1. C
140.	29/10/2002	2002 10 29 Landing an aircraft.ppt (18/09/2003)	Project 1 Outputs and reports. Internal Presentation	40	Describes the tasks involved in landing an aircraft in an HRO.	Contains plenty of photos and links the tasks with the 8 overall dimensions	Javi	4.1. C
141.	05/11/2002	2002 11 05 Unpacking processes and tasks in landing an aircraft.doc	Project 1. Outputs & reports. Internal document	4	The operation 'landing an aircraft' is broken into processes (reflecting the HRO characteristics) and tasks.	It is a nice tabulated analysis of how that key operation for a nuclear carrier contains all the attributes that describe an HRO	Javi	4.1. C
142.	12/11/2002	2002 11 12 HROs - 8 dimensions.ppt	Project 1 Outputs and reports. Internal Presentation	40	Describes the 8 dimensions of HROs	Contains with photos the description of the 8 overall dimensions	Javi	4.1. C
143.	12/11/2002	2002 11 12 HROs Presentation JMarcos.ppt	Project 1 Outputs and reports. Internal Presentation	32	A colourful presentation of the HRO findings	Contains the 8 dimensions and an explanation of how each of those activities contributes to HR	Javi	4.1. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
144.	12/11/2002	2002 11 12 Javi HRO Presentation v1.1.ppt	Project 1. Outputs & reports. Internal presentation	32	High Reliability Organisations. Characterisation, context and how do they achieve reliability: definition of each mechanism and how it enhances or jeopardizes reliability	Briefly explains with photos and clear messages the nature of HROs. This presentation was not widely used in MCompany.	Javi	4.1.C
145.	12/11/2002	2002 11 12 Quality assessment checklist for SR.xls	Project 1. Outputs & reports. SR	1	Contains relevant criteria to assess the quality of studies obtained from well regarded academic journals	Used in the SR and subsequently	Javi	4.1. C
146.	14/11/2002	2002 11 14 My ear hurts! - H8 view of a paper.txt	Project 1. Outputs and reports. Email	1	An email from A7 referring to H8's opinion of a HRO practitioner paper sent to MCompany.	Another example of the disagreement and difficulties that we had in agreeing about what HRO was about and how it should be presented	A7	4.1. C printed
147.	20/11/2002	2002 11 20 High Reliability at What Cost vf.doc	Project 1. Outputs & reports. Practitioner paper	4	Short paper called: Management and the development of high reliability organisations (HROs). Advanced Management Research Centre to support the Presentation on the 20 Nov 2002, Chesterfield Hotel London. There are 3 versions of this paper	Key practitioner article. This paper nicely summarises what HRO thinking can contribute to the debate. It was produced to the Presentation on the 20 Nov 2002, but was NOT used.	A6, A7 & Javi	4.1.C To print
148.	13/12/2002	HROpress release DD RJ.doc	Project 1. Outputs	3	Press release. New research reveals major accidents and fatalities could be avoided if industries adopt HRO principles	Summarises some of the ideas that were presented at the client dinner event on the 20th Nov 2002	A7, H8	4.1. C
149.	29/01/2003	2003 02 01 Press Release 422 HRO.doc	Project 1. Outputs & reports. Press release	4	Press release PR422 titled: "New Research Reveals Major Accidents And Fatalities Could Be Avoided If Industries Adopt Hro Principles"	Press release written by Tamesis reporter Cath Cookson	Ext	4.1.C To print
150.	01/03/2003	HRO Conference brief March2003.doc (26/07/2002)	Project 1. Events	2	The 'High Efficiency High Reliability' Paradox: Designing Public and Private Organisations For A 'Failure Free' Future? A MCompany-Cranfield Thought Leadership Event. Planned for March 2003 (did not occur)	This was the briefing for an HRO conference or thought leadership that never happened.	A7	4.1 B
151.	01/03/2003	HRO Conference flyer March2003.doc (10/04/2002)	Project 1. Events	3	The 'High Efficiency High Reliability' Paradox: Designing Public and Private Organisations For A 'Failure Free' Future? A MCompany-Cranfield Thought Leadership Event. Planned for March 2003 (did not occur)	This was the proposed content for a leaflet for an HRO conference or thought leadership that never happened.	A7	4.1 B
152.	12/03/2003	2003 02 28 HRO Protocol v.1.1.doc	Project 1. Outputs & reports. Systematic review.	34	High Reliability Organisations: A Systematic Review. Review Protocol and Findings from Scoping Study	The entire SR protocol is contained in this document	Javi	4.1.C Printed
153.	12/03/2003	2003 03 12 Appendix 6 Studies Excluded.doc (23/05/2003)	Project 1. Outputs & reports. Systematic review	20	Systematic review document, summarising the articles excluded and the reason for exclusion	This is the list of the more than 200 articles that were retrieved and printed for consideration	Javi	4.1.C Printed
154.	12/03/2003	2003 03 12 Appendix 0. HRO Scoping Study v1.0.doc (2003 03 04)	Project 1. Outputs & reports. Systematic review.	15	Scoping study for the systematic review	Contains a brief summary of 24 studies that helped map the field prior to conducting the SR	Javi	4.1.C Printed

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
155.	12/03/2003	2003 03 12 Appendix 1-2-3 Keywords - Authors track v1.1.xls (2002 09 06)	Project 1. Outputs & reports. Systematic review	12	Systematic review table	In depth analysis of keywords and authors included in the review	Javi	4.1.C Printed
156.	12/03/2003	2003 03 12 Appendix 4 - Databases search results.xls (2002 11 12)	Project 1. Outputs & reports. Systematic review	15	Systematic review table	Provides audit trial of the search results across all databases	Javi	4.1.C Printed
157.	12/03/2003	2003 03 12 Appendix 5 Studies summary.doc (2003 03 04)	Project 1. Outputs & reports. Systematic review	20	Systematic review document, summarising all the articles included in the review	Provides a summary of all the descriptive analysis fields, among others key findings, study background, data analysis procedures, quality assessment.	Javi	4.1.C Printed
158.	12/03/2003	HROs Descriptive Analysis vf.doc	Project 1. Outputs & reports. SR	40	HROs Descriptive Analysis of the studies in a tabulated form.	Contains the following fields: Empirical or theoretical, Country, Context or sector, Sample size, Methods of data collection, Method of data analysis, Study characteristics, Key findings, Subfield of study.	Javi	4.1 C Printed
159.	12/03/2003	HROs Thematic Analysis vf.doc	Project 1. Outputs & reports. SR	37	HROs Thematic Analysis of the studies in a narrative form.	Contains: Redundancy, learning and training, communication, culture, people management, decision-making, organisational structure, technology management.	Javi	4.1 C Printed
160.	23/09/2003	2003 09 23 Planing Gas HRO event.txt	Project 1. Workshops & events. Email	1	Information for project members as the progress of the Highways workshop and plans for the Gas workshop	H8 explains the plan for involving and attracting people from the gas industry	H8	4.1. B
161.	26/09/2003	2003 09 26 HRO workshop HA presentation v1.ppt (23 09 2003)	Project 1. Workshops & events. Presentation	35	A draft of the presentation to be delivered at the workshop with HA	To note how much work it still needs 3 days before the event	H8	4.1.B to print
162.	26/09/2003	2004 09 26 HRO workshop HA agenda version 2.doc	Project 1. Workshops & events. Agenda	1	Agenda for the workshop to be held on the 26 Sept 2003 at Cranfield	Two interesting questions were proposed at the workshop which seems not to be too clear. In what ways does the highways industry deploy HRO characteristics? What modes of failure does the highways industry commonly face, and how may HRO principles impact upon these failures?	H8	4.1. B
163.	02/12/2003	2003 12 02 Invitation letter to HRO workshop for GAS v1.doc (23 09 2003)	Project 1. Workshops & events. Letter1	1	A draft of the invitation letter to participate in the HRO workshop for gas companies	The document consistently refers to "industry" and how the industry can become reliable when the research is about 'organisations'	H8	4.1. B to print
164.	27/01/2004	2004 01 27 Feedback on ICE event London.txt	Project 1. Workshops & events. Email	2	An email from A7 to H8 giving feedback on the presentation at the ICE in London on the 27th Jan 2004.	Key email. A7 clearly points out all the inconsistencies and problems at that presentation.	A7	4.1. B printed

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
165.	03/02/2004	2004 02 03 MP HRO II protocol.doc	Project 1. Outputs & reports. SR	3	Describes the approach to conduct the review on organisational failure	This document became the standard protocol for subsequent reviews.	Javi	4.1.C
166.	02/08/2004	2004 08 02 HRO Proposal Toolkit for Wiltshire CC.txt	Project 1. Consulting and application	1	Email to explore the collaboration between MCompany and Cranfield to develop the High Reliability Organisational Design Methodology with Wiltshire County Council	Marks the 3rd epoch of the HRO research	1	4.1. D
167.	04/08/2004	2004 08 04 HRO Cranfield proposal Wltsh.doc	Project 1. Consulting and application	2	Advanced Management Research Centre - Cranfield School Of Management. A6 & A7. Outline Proposal - Developing and Applying The High Reliability Organisational Design Methodology with Wiltshire County Council.	Key document. This initial consultancy proposal was not taken forward but was the precedent for the work at HH.	A6, A7	4.1.D
168.	07/09/2004	2004 09 07 HRO II Org Failure - Descriptive Analysis.xls	Project 1. Outputs & reports. SR	7	HRO II Descriptive Analysis of the studies in a tabulated form.	Contains the following fields: Author, title, Source, Year, Type of study, Country, Sector, Sample size, Data collection, Purpuse, Key findings.	Javi	4.1 C Printed
169.	27/09/2004	2004 09 27 HRO II final report v0.6.doc	Project 1. Outputs & reports. SR	40	HRO II. Understanding Organisational Failure. HROs Thematic Analysis of the studies in a narrative form.	Summarizes the systematic review on organisational failure.	Javi	4.1 C Printed
170.	27/09/2004	Exploring Organizational Failure.pdf (05/12/2005)	Project 1. Outputs & reports. SR	40	Exploring Organisational Failure. Document ready to sent to print	Changes from 'understanding' to 'exploring' organisational failure. Format: professional report	Javi	4.1. C printed
171.	08/12/2004	High reliability organisation design.pdf (20/07/2006)	Project 1. Outputs & reports. SR	49	Latest version of the HRO I research. Document ready to sent to print	Contains well structured findings and recommendations for practice. Format: professional report.	Javi	4.1. C to print
172.	03/02/2003	2003 02 03 UVDB - Instructions & what to do there.txt	Project 1. Workshops & events. Email	1	Information about the UVDB event	It is interesting to note how H8 plans and instructs people to be alert and try to get as many business contacts as possible	H8	4.1.B
173.	23/06/2005	HRO III Draft Efficiency Flier.doc	Project 1. HRO. Outputs	1	A document titled: "Your Efficient and Effective Council -Delivered!" where the work between the company and Cranfield	Meant to be used in flyers and future information	H18	4.1. C
174.	15/12/2005	2005 02 05 HH SAB Perform. Improvement Plan.pdf	Project 1. Consultancy and implementation	9	Document for preparation of a meeting with Advance Consulting	Set out some of the problems and issues encountered in a previous performance improvement plan.	Ext	4.1. D
175.	15/12/2005	2005 07 05 HH SAB Workshop Outputs.pdf (12/01/2006)	Project 1. Consultancy and implementation	14	HH Strategic Alliance Board. Outputs from the workshop. Facilitated by Advance Consulting	Provides information of the problems that the alliance is facing.	Ext	4.1. D

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
176.	15/12/2005	2005 12 14 HRO HH Proposal v4.doc (16/12/2005)	Project 1. Consultancy and implementation	32	A Proposal for a High Reliability Change Programme for Hertfordshire Highways Design Team.	Key Document. It is the proposal sent to HH. Contains 1. Approach, 2. HRO (2.1 An introduction to high reliability, 2.2 Our understanding of your needs, 2.3 MPCompany managed services, 2.4 Key steps in the toolkit) 3, Detailed approach and costs, 3. Why MP and Cranfield? 6. Conclusion.	H15	4.1. D To print
177.	15/12/2005	2005 12 15 HR Toolkit Project Initiation Document v1.1.doc	Project 1. Consultancy and implementation	23	Project initiation document that specifies the approach, scope and methods for the project.	Key document. Contains: 1 introduction, 2 project definition, 3. project management (with methodology, reporting, communications and project controls, roles and responsibilities). 4 quality plan, 4 project planning.	H15	4.1. D To print
178.	15/12/2005	2005 12 15 MP Terms and Conditions.doc	Project 1. Consultancy and implementation	4	General MPCompany Terms and conditions	It is a requisite for the work MPCompany undertakes	H15	4.1. D
179.	15/12/2005	2005 12 15 Project Plan v1.0.mpp	Project 1. Consultancy and implementation	1	The original project plan for the implementation in HH	Contains tasks and timelines	H15	4.1. D
180.	15/12/2005	2005 12 15 Sub-Consultancy New for Management Consultancy.doc	Project 1. Consultancy and implementation	15	Sub-Consultancy for Management Consultancy. The standard contract for Management Consultancy when subcontract some work	Formal requirement MCompany needed to carry out the HH project with the contribution of Cranfield.	H15	4.1. D
181.	11/01/2006	2006 01 11 Prelim Diagnosis of HH.doc	Project 1. Consultancy and implementation	7	A preliminary diagnosis of the problems in HH	This document informs the implementation project	Ext	4.1. D
182.	12/01/2006	2006 01 12 Mpetus Improvement Regime.doc	Project 1. Consultancy and implementation	4	Details aims and objectives of a MPCompany-HH improvement plan	Set out some of the problems and issues encountered in a that the Mptus performance improvement plan seeks to achieve	Ext	4.1. D
183.	16/01/2006	2006 01 16 HR Toolkit in Action for HH.ppt	Project 1. Consultancy and implementation	1	Diagram of how the consulting engagement will work.	Key document. Explains in just one slides what is going to be done and why	A7	4.1.D to print
184.	26/01/2006	2006 01 26 HR in HH Toolkit Project Initiation Document v2.doc	Project 1. Consultancy and implementation	27	Sets out scope and content of the implementation project	Key document to understand the service that is expected to be provided	H15 A7	4.1.D
185.	02/02/2006	2006 02 02 HRO in HH Revised Work Plan v1 0.doc	Project 1. Consultancy and implementation	2	Contains key tasks and estimated end dates for phases 1, 2, and 3	Internal doc	H15	4.1.D
186.	07/02/2006	2006 02 07 HRO Implemt. One to One Interview guide.doc	Project 1. Consultancy and implementation	3	Interview guide for phase 1 of the project	Interesting document to see the key dimensions of the project	H15 A7	4.1.D
187.	08/02/2006	2006 02 08 HRO in HH Interviewees schedule.doc	Project 1. Consultancy and implementation	1	Names, dates and times for the interviews	Administrative document	H15 A7	4.1.D

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
188.	08/02/2006	2006 03 08 HRO in HH workshop 1- Group Exercise.doc	Project 1. Consultancy and implementation	1	Matrix used at the first workshop to map individual's perceptions for relevance and importance of the issues raised	Useful tool to have all the comments mapped out.	H15 A7	4.1.D
189.	15/02/2006	2006 02 15 HRO in HH Implemt. One to One Interview guidev2.doc	Project 1. Consultancy and implementation	3	Second version of the same doc. Incorporates findings and refinements after conducting the first set of interviews	Interesting document to see the key dimensions of the project	H15 A7	4.1.D
190.	15/02/2006	2006 02 15 HRO in HH Staff Communication note.doc	Project 1. Consultancy and implementation	2	A note sent by H17 to his staff to let them know about the project	Internal doc.	H17	4.1.D
191.	17/02/2006	2006 02 17 HRO in HH Interview Results.xls	Project 1. Consultancy and implementation	3	An early tabulated form of the interviews conducted.	Needs to be completed	H15	4.1.D
192.	27/02/2006	2006 02 27 Reliability Orientation Questionnaire v1.doc	Project 1. Consultancy and implementation	4	Using a forced distribution of points aims to uncover perception of individuals about different sets of HRO dimensions	Key document. Provided useful information to the team.	H15 A7	4.1.D
193.	08/03/2006	2006 03 08 HRO in HH workshop 1- Individual Exercise.doc	Project 1. Consultancy and implementation	1	A self questionnaire to score Reliability Statements from 1 to 5-.	Useful tool to uncover individual's assumptions about HRO	H15 A7	4.1.D
194.	08/03/2006	2006 03 08 HRO in HH workshop1 comments censored.ppt	Project 1. Consultancy and implementation	32	The presentation for the first workshop with sensitive comments from participants deleted.	Key document. Presents the scope of the project, HRO ideas and principles with good examples.	H15 A7	4.1.D
195.	08/03/2006	2006 03 08 HRO in HH workshop1 full.ppt	Project 1. Consultancy and implementation	32	Same document as the above but with all the comments shown.	Key document. Presents the scope of the project, HRO ideas and principles with good examples	H15 A7	4.1.D
196.	09/03/2006	2006 03 09 HRO in HH Project Board Meet1 Agenda.doc	Project 1. Consultancy and implementation	1	Agenda for the first project board meeting	Contents: 1. Review of Workshop of the 8th March. 2. Lessons from the development of the Questionnaire to all staff from the workshop and one to one interviews. 3. Project organisation. 4. Approval and Sign off of Revised Project Initiation Document.	H15 A7	4.1.D
197.	19/05/2006	2006 05 19 Invoice to MP for HRO pj for HH.doc	Project 1. Consultancy and implementation	1	Invoice for the project expenses	Invoice for the project expenses	A7	4.1.D
198.	06/06/2006	2006 06 06 HRO for HH Consulting Terms letter.doc	Project 1. Consultancy and implementation	1	High Reliability Change Programme For HH Design Team. Letter informing about the Management Consultancy Standards terms and conditions of business in connection with the HRO HH implementation project	This document may be taken as the termination of the project.	A6	4.1.D

Project 2. PPP

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
199.	26/11/2002	2002 11 26 Actions PPP Research forum.doc	Project 2. Meetings & comms. Actions & agendas	1	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
200.	27/11/2002	Actions PPP Research forum 26 11 2002	Project 2. Meetings	1	PPP's/Partnering Research Forum. Meeting 26th November 2002. Minutes/Actions	Attended A2, A3, James, Andy, David D, David V, June, Gail. Specifies the question "Is PPP a good or a bad thing?", for the Public Sector and for the Private Sector.	Gail	4.2 A
201.	28/01/2003	2003 01 28 Field notes PPP Meet 1.doc	Project 2. Meetings & comms. Notes	1	Notes from 1st meeting.	Pre-PPP meeting to put together lessons learned from project 1.	Javi	4.2.A Printed
202.	28/01/2003	2003 01 28 Field notes PPP Meet 2.doc	Project 2. Meetings & comms. Notes	3	Notes from 2nd meeting.	There is a discussion about where the project is headed and how to 'market' it properly.	Javi	4.2.A Printed
203.	28/01/2003	2003 01 28 SR process and scoping study.ppt	Project 2. Meetings & comms. Presentation	18	An interesting presentation of initial findings from a scoping study	In the presentation A7 declares "I need you to refine the question and tighten the inclusion / exclusion criteria"	A7	4.2. A
204.	27/02/2003	2003 02 27 Actions PPP Research forum.doc	Project 2. Meetings & comms. Actions & agendas	2	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
205.	27/02/2003	2003 02 27 Field notes PPP Meet 3.doc	Project 2. Meetings & comms. Notes	6	Notes from 3rd meeting.	Interesting to note that the progress has been slow and that P20 suggests we aim at doing feasible things rather than aiming for too much and doing too little.	Javi	4.2.A Printed
206.	27/02/2003	2003.02.27 P20 Actions - PPP 27th Feb 03- Will invite clients.txt	Project 2. Meetings & Comms. Email	1	Planning for next meeting. Planning client involvement	See the quote "Remember the intention is to invite clients/external agencies to the April meeting, so very important that we are all there at March meeting - for planning purposes"	P20	4.2. A To print
207.	12/03/2003	2003 03 12 PPP final report v6.doc	Project 2. Outputs and reports	44	Version 6 of the report	Contains graphs and figures about public investments in PPPs and other features. Contains all the references to de cited sources.	A4 & Javi	4.2. C
208.	26/03/2003	2003 03 26 Actions- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	3	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
209.	26/03/2003	2003 03 26 Field notes PPP meet 4.doc	Project 2. Meetings & comms. Notes	4	Notes from 4th meeting.	An interesting meeting where the role of the Steering Group is debated as well as the dissemination and exploitation of the research.	Javi	4.2.A Printed
210.	30/03/2003	2003.03.30 A3 - Re Classification of rel. PPP articles.txt	Project 2. Meetings & Comms. Email	1	Email asking A3 to provide an assessment of relevance	Some papers dating 1998 are thought to be old. This suggests theory is well behind practice	A3	4.2. Al

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
211.	09/04/2003	2003 04 09 Descriptive Analysis Practitioner Documents Final.xls	Project 2. Outputs and reports	3	Descriptive analysis of practitioner sources	The following fields were used: Author /Title/ Year/ Location/ Sector/ Report characteristics/ URL /Key findings	Javi	4.2. C
212.	17/04/2003	2003 04 17 PPP Databases Searches List.xls (28/01/2004)	Project 2. Outputs & reports	12	Specifies the searches across databases	5 databases were used, 23 keywords and 87 searches retrieving 251,054 references	Javi	4.2. C
213.	17/04/2003	2003 04 17 PPP Keyword list and search strings.xls	Project 2. Outputs & reports	2	Specifies the keywords and search strings used in the systematic review	Keywords were collaboratively derived	Javi	4.2. C.
214.	23/04/2003	2003.04.23 P20 PPP Forum - 29th April-P22 Confirm attendance.txt	Project 2. Meetings & Comms. Email	1	Email confirming P20's attendance and asking everybody to be ready!	A noticeable healthy nervous P20 from the email for inviting externals is perceived	P20	4.2. A
215.	29/04/2003	2003 04 29 Actions - PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	3	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
216.	29/04/2003	2003 04 29 Descriptive Analysis.ppt	Project 2. Outputs and reports. Presentation	7	Provides a brief initial view of the descriptive analysis	An initial mapping exercise to help focusing the research	Javi	4.2. C
217.	29/04/2003	2003 04 29 Field notes PPP meet 5.doc	Project 2. Meetings & comms. Notes	4	Notes from 5th meeting.	The approach of the study is decided: the managerial rather than the business case for PPPs. Good progress with the descriptive analysis is done	Javi	4.2.A Printed
218.	29/04/2003	2003 04 29 Managerial issues in PPPs.ppt	Project 2. Outputs and reports. Presentation	4	Some of the initial 'managerial issues' are identified and explained	An initial mapping exercise to help focusing the research	Javi	4.2. C
219.	29/04/2003	2003 04 29 PPP Presentation P20 & A7.ppt	Project 2. Meetings & comms. Presentation	15	Update presentation	Specifies the systematic review process and the state of the project	Javi	4.2. A
220.	01/05/2003	2003.05.01 A3 comments to PPP Protocol.txt	Project 2. Meetings & Comms. Email	1	A3 comments back from the PPP protocol	Key email. Just see the quote. "Similarly, you didn't set out responsibilities for actions from the team, eg who gets to sign off at various stages; also what you do expect of us?" (A3)	A3	4.2. A to print
221.	01/05/2003	2003.05.01 P20 PPP Forum Involving more clients	Project 2. Meetings & Comms. Email	1	P20 wondering whether it is too early to involve HA and LU or not	P20 is keen to go ahead with KCC	P20	4.2. A
222.	22/05/2003	2003 05 22 PPP Protocol v.0.2	Project 2. Outputs and reports	24	Contains detailed methodology and the process to conduct the systematic review	The protocol was (physically) signed by all the members of the forum.	Javi	4.2. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
223.	26/05/2003	2003 05 26 PPP Protocol final.doc	Project 2. Outputs and reports	24	Contains detailed methodology and the process to conduct the systematic review	The protocol was (physically) signed by all the members of the forum.	Javi	4.2. C
224.	05/06/2003	2003 06 05 Descriptive analysis table Final.xls (03/08/2004)	Project 2. Outputs and reports	9	Descriptive analysis of academic sources	Fields used in the analysis: Source / Year/ Pgs/ Type of Study/ Location/ Sector/ Sample size/ Data collection/ Study characteristics/ Key findings/ Subfield	Javi	4.2. C
225.	05/06/2003	2003 06 05 PPP - Practitioner papers ranking.xls (19/04/2004)	Project 2. Outputs and reports	7	Table used with the panel to decide on which papers were relevant be selected.	An ABC criteria was applied	Javi	4.2. C
226.	10/06/2003	2003 06 10 Actions - PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	3	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
227.	10/06/2003	2003 06 10 Descriptive Analysis Complete.ppt	Project 2. Outputs and reports. Presentation	13	Provides a summary of the descriptive analysis	An initial mapping exercise to help focusing the research	Javi	4.2. C
228.	10/06/2003	2003 06 10 Field notes PPP meet 6.doc	Project 2. Meetings & comms. Notes	5	Notes from 6th meeting.	The initial scoping analysis is presented. A7 proposes a structure for the report based on context, mechanisms and evidence. A4 is tasked with the search for practitioner sources. Twenty-seven institutions are identified. The case study approach as opposed to the survey is agreed.	Javi	4.2.A Printed
229.	11/06/2003	2003.06.11 P20 Notes from June Meeting task meeting.txt	Project 2. Meetings & Comms. Email	1	Just to report briefly the actions of the meeting	Note the comment: "We had good meeting - Javier bought cakes! (I forgot). We deliberately had a 'working meeting' - task and finish stuff rather than lots of discussion"	P20	4.2. A
230.	15/07/2003	2003.07.15 P20 Fwd RE PPP Meeting - 17th July C-M-Outcome approach.txt	Project 2. Meetings & Comms. Email	1	Approach to organise findings: Context-mechanisms-outcomes + finalise approach to case studies.	Important mail. A few comments are worth noting. "I'm really disappointed that you've sent apologies, particularly to this meeting. I needed you there! You add a dimension that is extremely helpful" (P20)	P20	4.2. A to print
231.	17/07/2003	2003 07 17 Actions PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	3	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
232.	17/07/2003	2003 07 17 Agenda- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	1	Agenda for the meeting.	Compiled by P20	P20	4.2.A Printed
233.	17/07/2003	2003 07 17 Field notes PPP meet 7.doc	Project 2. Meetings & comms. Notes	6	Notes from 7th meeting.	A healthy debate on quality of evidence, how to integrate disperse evidence and how to distil key generative mechanisms	Javi	4.2.A Printed

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
234.	17/07/2003	2003 07 17 Progress report.ppt	Project 2. Meetings & comms. Presentation	11	Update presentation	Specifies the progress to date	Javi	4.2. A
235.	22/07/2003	2003.07.22 P20 PPP Meet 17th July P22 suggest reports.txt	Project 2. Meetings & Comms. Email	1	P20 Forwards and email from P22	The reports P22 mentions were never used	P20 P22	4.2. A
236.	30/07/2003	2003.07.30 A4 Asks input into rating practitioner papers.txt	Project 2. Meetings & Comms. Email	1	A4 asks for input into ranking the practitioner papers	This task is being done more that 6 months on the project, well behind the academic review	A4	4.2. A
237.	13/08/2003	2003.08.13 A3 cant rank the practitioner docs.txt	Project 2. Meetings & Comms. Email	1	Email back from A3 excusing for not ranking the list of practitioner docs.	"The spreadsheet format is very compressed -makes it hard to scan Too compressed" (A3)	A3	4.2. A
238.	14/08/2003	2003.08.14 P20 PPP Meeting 28th August calling ALL.txt	Project 2. Meetings & Comms. Email	1	P20 asking for everybody's participation to deal with 3 main issues.	"We have a lot to do to prepare for the client interviews (to take place early September); for the external challenge meeting on 7th October and for the MCompany-Cranfield Dinner (presenting the findings to selected invited clients) on 4th November 2003". None of these dates were confirmed	P20	4.2. A
239.	15/08/2003	2003 08 15 From abstraction to concrete diagram.ppt	Project 2. Meetings & comms. Presentation	1	Illustrates the different levels of abstraction and detail in the concepts and findings	Just a diagram to clarify	Javi	4.2. A.
240.	21/08/2003	2003.08.21 Javi PPP forum 28 Aug 2003 preparing for the meta plan meeting.txt	Project 2. Meetings & Comms. Email	1	Email preparing for what is going to be needed in the meta plan meeting.	The aim of the meta plan is to aid in: discuss, organise, validate and prioritise the findings	Javi	4.2. A
241.	23/08/2003	2003 08 23 Actions - PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	5	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
242.	26/08/2003	2003.08.26 P20 Agenda- PPP Research Forum 28th August.txt	Project 2. Meetings & Comms. Email	1	Sending the agenda	Attendance has always been an issue: See P20 warning "If you CANNOT attend, please let me know by return."	P20	4.2. A
243.	28/08/2003	2003 08 18 Metaplan lables & stripes.doc	Project 2. Outputs and reports	18	Dimensions and quotes to be used in the metaplan panel	The use of the metaplan was judged to be critical for understanding the research and having a broad picture of it	Javi	4.2. C
244.	28/08/2003	2003 08 28 Agenda- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	1	Agenda for the meeting.	Compiled by P20	P20	4.2.A Printed

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
245.	28/08/2003	2003 08 28 Field notes PPP meet 8.doc	Project 2. Meetings & comms. Notes	6	Notes from 8th meeting.	From 80 practitioner sources, 18 were filtered down. The dimensions and themes are presented using the metaplan exercise. After seeing the outcomes A2 suggest taking a process view of PPPs. Not a lot of significant changes are otherwise made.	Javi	4.2.A Printed
246.	28/08/2003	2003 08 28 PPP Dimensions and Themes v1.doc	Project 2. Outputs and reports	16	The first summary of the review containing detailed information on all the dimensions and themes and quotes to illustrate the concepts	This formed the basis of the later metaplan	Javi	4.2.C
247.	28/08/2003	2003 08 28 PPP metaplan picture.jpeg	Project 2. Meetings & comms. Photo	1	A photo of the metaplan exercise we did	Describes how the process was organised	Javi	4.2.A.
248.	01/09/2003	2003.09.01 P20 PPP Meeting 28th August - Actions PLEASE READ!	Project 2. Meetings & Comms. Email	1	Sending agenda. Proposing involvement of new bodies.	P21 suggests involving Treasury, ODPM, the City. None of them were invited	P21	4.2. A
249.	03/09/2003	2003 09 03 PPP Dimensions and Themes v2.doc	Project 2. Outputs and reports	16	Version 2 of the same doc.	Idem	Javi	4.2. C
250.	03/09/2003	2003 09 03 PPP Model v.0.1.ppt	Project 2. Outputs and reports. Presentation	3	A first attempt to model the findings of the research	Tabulated format	Javi	4.2. C
251.	08/09/2003	2003.09.08 A7 & P20 PPP How to conduct the Case Study Interviews v2.txt	Project 2. Outputs & reports. Email	1	Comments on the best way to conduct the interviews whether using the model or just open & semi structured.	" A7 and Javi both think that using the model as a basis brings in too much potential for us influencing them…. I did think this through at the time I was designing the questions, but led myself to believe that the Case Study interviews would be too unstructured if we didn't use the model (…) So, on reflection think they are both absolutely right" (P20)	A7 & P20	4.2. C
252.	08/09/2003	2003.09.08 P20 PPP Research - Case Study Interviews - Questions – URGENT.txt	Project 2. Outputs & reports. Email	1	Email confirming 2 external clients for the challenge meeting and asking for help on the best way to formulate the questions for the case study.	Even on how to ask the questions in the case study we struggled	P20	4.2. C
253.	08/09/2003	2003.09.08 P20 to A4 & Javi to amend the pillar model.txt	Project 2. Outputs & reports. Email	1	A minor change in the very first version of the model	Initially the model was like a Greek temple with some pillars. Then changed to an engine and finally to the cycle.	P20	4.2. C
254.	11/09/2003	2003 09 11 PPP Executive Summary v1.doc	Project 2. Outputs and reports	5	Executive summary for the report	Preliminary version	All	4.2. C
255.	12/09/2003	2003 09 12 PPP Executive Summary v2.doc	Project 2. Outputs and reports	8	Executive summary for the report	Long version	All	4.2. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
256.	12/09/2003	2003.09.12 A4 Version 2 PPP report.txt	Project 2. Outputs & reports. Email	1	A4 sends a version of the report.	Note A4 says "In the email i think we should highlight that: we recognise it needs editing". Never a finalised work from him	A4	4.2. C
257.	29/09/2003	2003.09.29 P20 Agenda for external challenge day 7th October 2003.txt	Project 2. Meetings & Comms. Email	1	P20 sends agenda for next meeting, noting the importance of the day and some lack of interest from HA	"it is a particularly important day in terms of this process (…) I'm a bit disappointed with the response from the HA". How come their best client is not interested in PPPs	P20	4.2. A
258.	07/10/2003	2003 10 07 Detailed example of review process.ppt	Project 2. Outputs & reports	6	Outlines how the synthesis was conducted	From a selected paper, a proxi document containing a 3 to 5 page summary was created and coded into Nvivo	Javi	4.2. C.
259.	07/10/2003	2003 10 07 Actions PPP Research Forum EC.doc	Project 2. Meetings & comms. Actions & agendas	2	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
260.	07/10/2003	2003 10 07 Agenda- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	2	Agenda for the meeting.	Compiled by P20. Sets out the format of the 'challenge meeting'	P20	4.2.A Printed
261.	07/10/2003	2003 10 07 Field notes PPP meet 9-Challg Meet.doc	Project 2. Meetings & comms. Notes	3	Notes from 9th meeting.	Three external clients are involved to give feedback on the process. Interestingly it is said that the findings could "potentially lead to 'self reinforcing things". What PPPs meant in different sectors was the subject of a lengthy discussion. The toolkit is not widely supported. In terms of the event, "if it is a dinner where you could see what really works, then that is intrinsically interesting" (external client).	Javi	4.2.A Printed
262.	07/10/2003	2003 10 07 PPP challenge meeting A7 slides.ppt	Project 2. Meetings & comms. Presentation	6	A7 overview of the SR process	For getting people up to speed	Javi	4.2. A
263.	08/10/2003	2003 10 08 Metaplan lables & stripes big format.doc	Project 2. Outputs and reports	26	Dimensions and quotes to be used in the metaplan panel	Bigger format for display	Javi	4.2. C
264.	04/11/2003	2003 11 04 PPP Report v1.doc	Project 2. Outputs and reports	16	The first draft of the report was produced	The focus was on the structure rather than on the development of content	Javi	4.2. C
265.	09/11/2003	2003.11.09 P20 Agenda- PPP Forum 13th November.txt	Project 2. Meetings & Comms. Email	1	Sending the agenda.	Interesting quote "We need to have a good 'take stock' - we need to ensure we don't lose momentum!" (P20)	P20	4.2. A
266.	13/11/2003	2003 11 13 Agenda- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	1	Agenda for the meeting.	Compiled by P20	P20	4.2.A Printed

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
267.	13/11/2003	2003 11 13 Field notes PPP meet 10.doc	Project 2. Meetings & comms. Notes	2	Notes from 10th meeting.	Meeting focused on reflections and evaluation of the previous meeting. The 'so what' question was worrying because the invitees confirmed all our points and did not add a lot more. It is proposed to frame the research as a leadership challenge.	Javi	4.2.A Printed
268.	19/11/2003	2003 11 19 PPP Report v2.doc	Project 2. Outputs and reports	30	Second version of the document	Extends significantly the content of each section	Javi	4.2. C
269.	20/11/2003	2003 11 20 PPP Report v3.doc	Project 2. Outputs and reports	33	Third version of the report	The case studies are incorporated in a separate section	Javi	4.2. C
270.	20/11/2003	2003 11 20 PPP Report v4.doc	Project 2. Outputs and reports	33	Fourth version of the report	Five parts are clearly distinguishable: (1) the case for or against PPPs, (2) Definition of PPP, (3) What makes a public-private partnership (PPP) succeed or fail? (4) the MCCentre, (5) Methodology (6) PPP in practice Case studies.	Javi	4.2. C
271.	20/11/2003	2003 11 20 PPP Report v5.doc	Project 2. Outputs and reports	34	Fifth version of the report	The structure of the management of PPPs is as follows: 1. Procurement processes in PPP, 2.Contract Management, 3. Managing the PPP, 4. Measuring partnership performance, 5.Behavioural aspects of successful PPPs, 6. Risk management in PPPs	Javi	4.2. C
272.	21/11/2003	2003 11 21 Strength of evidence of studies-Table.xls	Project 2. Outputs and reports	8	Table produced to provide a brief overview of the strength of the evidence contained in the papers	Complements the descriptive analysis tables	Javi	4.2. C
273.	25/11/2003	2003 11 25 PPP Report v5.1.doc	Project 2. Outputs and reports	33	Version 5.1. of the report	Minor changes from the previous	Javi	4.2. C
274.	27/11/2003	2003 11 27 PPP Report v5.2.doc	Project 2. Outputs and reports	33	Version 5.2 of the report	The six dimensions are condensed into four: 1). Project design and procurement. 2) Contract Management. 3) Project Management and Delivery, 4) Partnership Performance Measurement.	Javi	4.2. C
275.	11/12/2003	2003.12.11 P20 PPP Agenda- 15th December.txt	Project 2. Meetings & Comms. Email	1	Sending the agenda. First conversations about the format for the event.	"At this meeting we really do need to sort the format of the event and the clients we are going to invite" (P20).	P20	4.2. A
276.	15/12/2003	2003 12 15 Agenda- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	1	Agenda for the meeting.	Compiled by P20	P20	4.2.A Printed
277.	15/12/2003	2003 12 15 Field notes PPP meet 11.doc	Project 2. Meetings & comms. Notes	1	Notes from 11th meeting.	Short meeting. The team attends A3 presentation at Cranfield.	Javi	4.2.A Printed
278.	13/01/2004	2004 01 13 PPP Executive summary v3.doc	Project 2. Outputs and reports	2	Executive summary for the report	Short version	All	4.2. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
279.	13/01/2004	2004 01 13 PPP Executive summary v4.1.doc	Project 2. Outputs and reports	2	Executive summary for the report	Short version	All	4.2. C
280.	13/01/2004	2004 01 13 PPP Executive summary v4.2.doc	Project 2. Outputs and reports	2	Executive summary for the report	Short version	All	4.2. C
281.	13/01/04	2004 01 13 PPP Executive summary v4.doc	Project 2. Outputs and reports	2	Executive summary for the report	Short version	All	4.2. C
282.	19/01/2004	2004 01 19 PPP Executive summary v5.doc	Project 2. Outputs and reports	2	Executive summary for the report	Short version	Alli	4.2. C
283.	18/02/2004	2004.02.18 A4 PPP report & 8 pager to review.txt	Project 2. Outputs & reports. Email	1	A4 Sending report and summary for A6 and Javi to review	Short time scale to review	P20	4.2. C
284.	19/02/2004	2004 02 19 8 pager document final.doc	Project 2. Outputs and reports	8	This is an overview of the report	Aimed to provide the content for a flyer or similar publication.	All	4.2. C
285.	19/02/2004	2004 02 19 PPP final report v7.doc	Project 2. Outputs and reports	34	Version 7 of the report	Figures have been taken out. New structure to the document: 1. Project design and procurement. 2. Defining and setting up the contract. 3.Project management and delivery. 4. Partnership performance measurement. 5.Conclusion	All	4.2. C
286.	26/02/2004	2004 02 26 Actions - PPP Forum Flipchart notes.doc	Project 2. Meetings & comms. Actions & agendas	2	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
287.	26/02/2004	2004 02 26 Field notes PPP meet 12.doc	Project 2. Meetings & comms. Notes	4	Notes from 12th meeting.	Three outputs are discussed: 8 pager, 25 page report and the 80 page guide. The draft report is assessed and P20 says "I think we need to be ruthless about this, so anybody that has been involved in writing do not be offended". A total of 12 key improvements are discussed.	Javi	4.2.A Printed
288.	26/02/2004	2004 02 26 PPP final report v8.doc	Project 2. Outputs and reports	33	Version 8 of the report	The title has changed, taking out 'systematic review' and calling it 'A Coproduction approach to review the Knowledge in the field". Questions for managers sections are included	All	4.2. C
289.	01/03/2004	2004 03 01 Model drawing- 'The engine'.jpeg	Project 2. Outputs & reports	1	An image of the first attempt to model the PPP project, called 'the engine'.	This model was not considered appropriate given its 'mechanistic' nature	P20	4.2. C
290.	01/03/2004	2004.03.01 P20 Fwd 1st version of 'The Engine'.txt	Project 2. Outputs & reports Email	1	This is the first version of the model: the 'engine' model	It was from the very beginning described as too engineering…	P20	4.2. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
291.	02/03/2004	2004.03.02 P20 Re Article on Leadership in PPP.txt	Project 2. Meetings & Comms. Email	1	Reply to the article "Enacting Leadership for Collaborative Advantage: Dilemmas of Ideology and Pragmatism in the Activities of Partnership Managers" was sent. This was sent when we were already talking about leadership	Only P20 replied. Did anyone ever read it? Don't know	P20	4.2. A
292.	10/03/2004	2004 03 10 PPP final report v9.doc	Project 2. Outputs and reports	22	Version 9 of the report	New title "Summary Report from the MCompany Parkman Cranfield Centre Research Forum". Figures and references have been taken out	All	4.2. C
293.	16/03/2004	2004 03 16 PPP final report v9.1doc	Project 2. Outputs and reports	23	Version 9.1 of the report	Content changes	All	4.2. C
294.	17/03/2004	2004 03 17 PPP final report v9.2.doc	Project 2. Outputs and reports	25	Version 9.2 of the report	Tables (e.g. types of risks) are included as well as more quotes	All	4.2. C
295.	17/03/2004	2004.03.17 Javi & A7 Re PPP Report towards a final version-Nightmare.txt	Project 2. Outputs & reports. Email	1	Javi and A7 to A4 about the hurdles of editing the document.	All the linkages between Procite and word had been lost, meaning that Javi had to manually import every piece.	Javi & A7	4.2. C To print
296.	31/03/2004	2004 03 31 Actions- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	2	Actions from the meeting.	Compiled by P20	P20	4.2.A Printed
297.	31/03/2004	2004 03 31 Agenda- PPP Research Forum.doc	Project 2. Meetings & comms. Actions & agendas	1	Agenda for the meeting.	Compiled by P20	P20	4.2.A Printed
298.	31/03/2004	2004 03 31 Field notes PPP meet 13.doc	Project 2. Meetings & comms. Notes	3	Notes from 13th meeting.	Moving towards the client event, a first draft of the presentation is presented and the different outputs	Javi	4.2.A Printed
299.	02/04/2004	2004.04.02 P20 Actions- PPP Research Forum 31st March 2004.txt	Project 2. Meetings & Comms. Email	1	Meeting notes. Approaching the event	Quote: "There are the notes from the last meeting - there are LOTS of actions so please read carefully" A question that emerges is the extent to which all these actions were conductive of learning.	P20	4.2. A
300.	05/04/2004	2004.04.05 A4 Leaving MP and handing over.txt	Project 2. Project 2. Outputs & reports. Email	1	Email announcing A4's departure and handing over	If someone from the PPP project read this comment (working over the weekend even when he had left), and after all the problems to have him do something… "and although today is officially my last day i will be continuing to work on the PPP stuff over the weekend. A4	Javi & A4	4.2. C
301.	14/04/2004	2003 04 14 PPP Protocol v.0.1	Project 2. Outputs and reports	23	Contains detailed methodology and the process to conduct the systematic review	The protocol was (physically) signed by all the members of the forum.	Javi	4.2. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
302.	14/04/2004	2004.04.19 A4 & ext complaints about Case Study transcription.txt	Project 2. Outputs & reports. Email	1	Email from BB a company we did the case studies on complaining about inaccuracies.	Note the interviewee says "The "report" contains a number of inaccuracies (please call me to discuss)"	Ext A4	4.2. C
303.	15/04/2004	2004 04 15 AL case study.doc	Project 2. Outputs & reports	3	A brief description of the partnership based on secondary data	Only few quotes and limited information on this case was used	A4	4.2. C
304.	15/04/2004	2004 04 15 HH PPP case study.doc	Project 2. Outputs & reports	4	Case study based on documentary data and notes taken from an interview	Only few quotes and limited information on this case was used	A4	4.2. C
305.	15/04/2004	2004 04 15 MP case study.doc	Project 2. Outputs & reports	2	Brief description of the partnership in connection with the AL – HH cases	Only few quotes and limited information on this case was used	A4	4.2. C
306.	15/04/2004	2004 04 15 PPP Description of empirical work - Case Study.doc	Project 2. Outputs & reports	6	This document contains the questions to be asked at the case studies.	A useful document specifying the research design for the case studies.	A4	4.2. C to print
307.	15/04/2004	2004 04 15 Report quotes.doc	Project 2. Outputs & reports	2	Selected quotes to incorporate to the main document	These quotes were used, although anonymity was kept at all times.	A4	4.2. C
308.	15/04/2004	2004 04 15 TLK Case Study.doc	Project 2. Outputs & reports	3	Brief description of the case.	Only few quotes and limited information on this case was used	A4	4.2. C
309.	15/04/2004	2004.04.15 A4 Leaving - presents HRO takeover.txt	Project 2. Outputs & reports. Email	1	Last Email from A4, sending out the case study material and communicating that someone from LG is picking up HRO	" so that I can pass it on to A2, and one of our guys here who is picking up HRO in LG (have also given him your email address)"	A4	4.2. C
310.	19/04/2004	2004 04 19 BB case study.doc	Project 2. Outputs & reports	2	Brief case study	Only few quotes and limited information on this case was used. The interviewee sent an email saying that the case narrative contained a number of inaccuracies	A4	4.2. C
311.	19/04/2004	2004 04 19 PPP final report v10.doc	Project 2. Outputs and reports	27	Version 10 of the report	A3 contributes with heavily editing the document and making many suggestions on stile and content.	A3	4.2. C
312.	20/04/2004	2004.04.20 Javi Sending Case studies & asking posters for event	Project 2. Workshops & events. Email	1	Javi explores the possibility to use posters at the centre	Another contribution beyond the scope of the research	Javi	4.2. B
313.	21/04/2004	2004.04.21 P20 & Javi on PPP Taster.txt	Project 2. Outputs & reports. Email	1	Email about the content of a 'taster' or brochure to accompany the main report	The taster was never produced	P20	4.2. C To print
314.	23/04/2004	2004 04 23 PPP for MAY Event presentation v0.0.ppt	Project 2. Workshops & events. Presentation	29	Presentation for the client event scheduled for 20 May 2004	This event was later postponed	P20 & A7	4.2. B
315.	23/04/2004	2004 04 23 PPP for MAY Event presentation v0.1.ppt	Project 2. Workshops & events. Presentation	29	Presentation for the client event scheduled for 20 May 2004	This event was later postponed	P20 & A7	4.2. B

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
316.	24/04/2004	2004.05.24 Javi quotes from The Channel Tunnel PPP.txt	Project 2. Outputs & reports. Email	1	Javi provided Gail with examples of partnerships. Now he sends specific quotes to illustrate	A lot of work was down to Javier in the end. No consultant at the MCompany end to work on this matters	Javi	4.2.C to print
317.	25/04/2004	2004 04 25 PPP for MAY Event presentation v0.2.ppt	Project 2. Workshops & events. Presentation	29	Presentation for the client event scheduled for 20 May 2004	This event was later postponed	P20 & A7	4.2. B
318.	29/04/2004	2004 04 29 Agenda- PPP Forum.doc	Project 2. Meetings & comms. Actions & agendas	1	Agenda for the meeting.	Compiled by P20	P20	4.2.A Printed
319.	30/04/2004	2004.04.30 A7 PPP not novel what to do.txt	Project 2. Workshops & events. Email	1	A7's email responding about the decision of the board to postpone the PPP event, concerns about it and options.	Key email. The event is postponed because the board thinks there is nothing new on the report.	A7	4.2. B to print
320.	12/05/2004	2004 05 12 Field notes PPP meet 14.doc	Project 2. Meetings & comms. Notes	2	Notes from 14th meeting.	The use of the weak cases is discussed as well as the format for the event.	Javi	4.2.A Printed
321.	13/05/2004	2004.05.13 Javi notes from the challenge meeting summary of issues.txt	Project 2. Meetings & Comms. Email	1	Javi summarises and sends out the notes of the challenge meeting.	The lack of novelty is recognised. Participants think whether a 'how it works' approach would work	Javi	4.2. A To print
322.	14/05/2004	2004.05.14 Javi spelling errors of the taster.txt	Project 2. Outputs & reports. Email	1	Javi answers an email and provide suggestions to amend the taster	Few of the documents that were produced, were sent out proof-read	Javi	4.2. C.
323.	17/05/2004	2004 05 17 The leadership challenge.ppt	Project 2. Outputs and reports. Presentation	7	It is a document to help framing the leadership challenges in PPPs	Towards the end of the project it was decided to incorporate the leadership element.	Javi	4.2. C.
324.	17/05/2004	PPP Forum - Client event presentation v0.ppt	Project 2. PPP Events	29	What makes a PPP succeed or fail? – the Leadership Challenge 20th May 2004 (was postponed to 22 June 2004). The Grosvenor Hotel, Park Lane, London	It is a first and early version of the presentation that was given on the day of the event.	P20	4.2 B
325.	21/05/2004	2004 05 21 Context- Mech- Outcome Table for PPP.doc	Project 2. Outputs and reports	2	This table is an attempt to present the findings in a more compelling way	The approach taken aims to answer the question: what works, for whom in which circumstances	Javi	4.2. C
326.	21/05/2004	2004 05 21 PPP Dimens- explanation- illustration table v0.2.doc	Project 2. Outputs and reports	6	This table was produced to aid P20 in presenting an more 'punchy' argument in the presentation	An extended version of the same document	Javi	4.2. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
327.	21/05/2004	2004 05 21 PPP Dimens-explanation-illustration table.doc	Project 2. Outputs and reports	5	This table was produced to aid P20 in presenting an more 'punchy' argument in the presentation	Since the forum members did not review the studies, some found difficult to connect the arguments with concrete examples	Javi	4.2. C
328.	21/05/2004	2004.05.21 Javi enhancing report-dimension, explan, illustr.txt	Project 2. Outputs & reports. Email	1	In order to reinforce the explanatory power of the report, this table is produced.	The first version of the synthesis had to be heavily manipulated to become relevant to practitioners	Javi	4.2. C
329.	23/05/2004	2004.05.23 P20 more PPP Examples for the exec dry run.txt	Project 2. Outputs & reports. Email	1	The Exec Board asked for more examples of PPPs. Javi provided a list of different PPP cases extracted from literature.	I wonder whether too much emphasis was placed on the presentation and the Exec did not perceived	Javi	4.2. C
330.	08/06/2004	2004.06.08 P20 asks Pictures from External Challenge.txt	Project 2. Workshops & events. Email	1	P20 asks for more photos such as the one taken doing the metaplan	Visuals and photos were very useful	Javi	4.2. B
331.	15/06/2004	2004.06.15 P20 PPP Client Event 22nd and 23rd June Instructions	Project 2. Workshops & events. Email	1	P20 sends out general instructions about roles and responsibilities for the event	The structure and content has changed significantly as this quote reflects "The focus is on the workshop not the presentation and dinner"	P20	4.2. B
332.	17/06/2004	2004.06.17 P20 PLEASE READ - PPP22nd June Facilitators & Reporters.txt	Project 2. Workshops & events. Email	1	P20 explaining the roles of facilitators and reporters.	Prior to the event there were numerous communications to ensure everyone knew what was going to happen	P20	4.2. B
333.	18/06/2004	2004.06.18 P24 FW PPP Cranfield Dinner URGENT.txt	Project 2. Workshops & events. Email	1	P24 asks details about names and roles to produce a list of who attended.	Last minute urgency from P24	P24	4.2. B
334.	22/06/2004	2004 06 22 Flyer and invitation.ppt (21/05/2004)	Project 2. Workshops & events	10	A summary of the preliminary information sent to attendees	Contains the invitation and some brief messages about the project.	P20	4.2. B
335.	22/06/2004	2004 06 22 PPP Client event presentation final.ppt	Project 2. Workshops & events	48	The final presentation at the event.	Contains both process information and findings	A7 & P20	4.2. B
336.	22/06/2004	2004 06 22 Field notes PPP Event London.doc	Project 2. Events and workshops	1	The client event was run with good results and overall satisfaction about the dinner and workshop.	The event was overall well run. Discussions from the tables were collected and input into the main document.	Javi	4.2.A Printed
337.	22/06/2004	2004 06 22 Fotos PPP event	Project 2. Workshops & events	10	Photos of the presenters and the reporter's meeting	To illustrate what happened on the day	Javi	4.2. B.

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
338.	22/06/2004	2004 06 22 PPP Dinner Attendees.xls	Project 2. Workshops & events	2	A list with the invitees to the dinner	On the day a brief synopsis of every attendee was given together with background information	P20	4.2. B
339.	22/06/2004	2004 06 22 PPP Event presentation v0.1.ppt (09/06/2004)	Project 2. Workshops & events. Presentation	48	Early versions of the presentation prepared for the client event on the 22 June 2004	Contains the welcome and introductions from A6 and A16	P20 & A7	4.2. B
340.	22/06/2004	2004 06 22 PPP Event presentation v0.2.ppt (09/06/2004)	Project 2. Workshops & events. Presentation	48	Early versions of the presentation prepared for the client event on the 22 June 2004	Contains the welcome and introductions from A6 and A16	P20 & A7	4.2. B
341.	22/06/2004	2004 06 22 PPP Event presentation v0.3.ppt	Project 2. Workshops & events. Presentation	48	Early versions of the presentation prepared for the client event on the 22 June 2004	Contains the welcome and introductions from A6 and A16	P20 & A7	4.2. B
342.	22/06/2004	2004 06 22 PPP Event presentation v0.4.ppt	Project 2. Workshops & events. Presentation	48	Early versions of the presentation prepared for the client event on the 22 June 2004	Contains the welcome and introductions from A6 and A16	P20 & A7	4.2. B
343.	22/06/2004	2004 06 22 PPP Event -Reporters Guide.doc (17/06/2004)	Project 2. Workshops & events	6	Extended version of the roles and responsibilities of the reporters the day of the event	The key questions for participants are identified and prompts for each of the questions	P20	4.2. B
344.	22/06/2004	2004 06 22 Reporters role and deadlines post event.doc (07/06/2004)	Project 2. Workshops & events	2	Describes the reporters role and deadlines post event	Among others, special emphasis is done in accurately capturing quotes, examples, anecdotes, arguments, suggestions, frameworks etc.	A7	4.2. B
345.	22/06/2004	2004 06 22 Summary discussion Q4 & Q5.doc (29/06/2004)	Project 2. Workshops & events	2	Answers to the questions posed to participants at the event	Summarises the discussions about questions 4 and 5	All	4.2. B
346.	22/06/2004	2004 06 22 Summary discussion Q5 & Q7.doc (02/07/2004)	Project 2. Workshops & events	2	Answers to the questions posed to participants at the event	Summarises the discussions around questions 5 and 7	P20	4.2. B
347.	22/06/2004	2004 06 22 Summary discussion table 2.doc (29/06/2004)	Project 2. Workshops & events	2	Answers to the questions posed to participants at the event	Summarises the discussions occurred at table 2	All	4.2. B
348.	22/06/2004	2004 06 22 Summary discussion table 5.doc (29/06/2004)	Project 2. Workshops & events	2	Answers to the questions posed to participants at the event	Summarises the discussions occurred at table 5	All	4.2. B

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
349.	25/06/2004	2004.06.25 P20 Thank you after the event.txt	Project 2. Workshops & events. Email	1	P20 sends an email to thank everybody for their contribution	Note the acknowledgement of the difficulties but the P20´s overall satisfaction: "we have had our stresses and strains, but despite that I think we have been a good and effective team"	P20	4.2. B
350.	03/07/2004	2004 07 03 PPP final report v11.rtf	Project 2. Outputs and reports	64	Version 11 of the report	Incorporates the descriptive analysis, all the models and a new 2 point structure: 1. Designing and organising the partnership. 2. Developing and managing the relationship	All	4.2. C
351.	03/07/2004	2004 07 03 Static diagram for PPP findings.ppt	Project 2. Outputs and reports	1	Diagram of a version of the PPP model	In the form of columns this model aimed to capture all critical PPP dimensions	All	4.2. C
352.	04/07/2004	2004 07 04 Key questions raised in our exploratory work.doc	Project 2. Workshops & events	3	This document summarises the key questions raised by our exploratory work and the insights gathered from the forum	In other to incorporate it to the main report, this summary was written.	A7	4.2. B
353.	05/07/2004	2004 07 05 Field notes PPP meet 15.doc	Project 2. Meetings & comms. Notes	2	Notes from 15th meeting.	The reporters gathered comments and notes rather than meaningful findings, which made it difficult to be incorporated into the main document. At this stage the feeling is that the project is taking too long. Distribution of responsibilities is not helping to shape and finalise the contents of the report.	Javi	4.2.A Printed
354.	06/07/2004	2004 07 06 PPP final report v12.doc	Project 2. Outputs and reports	35	Version 12 of the report	Similar to the previous version without the descriptive analysis	All	4.2. C
355.	06/07/2004	2004 07 06 PPP Forum - Studies included.doc	Project 2. Outputs and reports	3	A final check of the references to be included in the report	This appeared at the back of the document	Javi	4.2. C
356.	07/07/2004	2004 07 07 The PPP Model Final version.doc	Project 2. Outputs and reports	1	The PPP Model Final version	This is the dynamic version that incorporates all the elements	All	4.2. C
357.	09/07/2004	2004 07 09 PPP Final report v12.1.doc	Project 2. Outputs and reports	35	Version 12.1 of the report	Completed with re-designed tables and the contributions from the Forum	All	4.2. C
358.	09/07/2004	2004 07 09 PPP Final report v12.2.doc	Project 2. Outputs and reports	65	Version 12.2 of the report	Incorporates the descriptive analysis tables	All	4.2. C
359.	09/07/2004	2004.07.09 P20 crafting report after event.txt	Project 2. Outputs & reports. Email	1	Email from P20 suggesting postponing the launch of the PPP report.	Time frames for producing outputs have often been push back.	P20	4.2.C
360.	11/07/2004	2004.07.11 Javi sends out first full copy report.txt	Project 2. Outputs & reports. Email	1	The first version of the final report (after incorporating the inputs from the workshop)	Javi & A7 did most of the editing of the final version of the doc.	Javi	4.2.C
361.	16/07/2004	2004.07.16 P22 additions to full v1 report.txt	Project 2. Outputs & reports. Email	1	P22 minor inputs to the report	Note the comment with regards to the different people involved: "I know the process was a bit tortuous"	Javi	4.2.C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
362.	23/07/2004	2004.07.23 P19, P20 comments of full version of report.txt	Project 2. Outputs & reports. Email	1	P19 raise a number of issues that are subsequently commented on by P20.	Key email. Reflects how an apparent clear mission can get difficult and sophisticated	Javi	4.2.C.
363.	30/07/2004	2004 07 30 PPP Final report v13.doc	Project 2. Outputs and reports	33	Version 13 of the report	Minor changes. Sets the definite structure with appendixes detailing the methods, etc.	All	4.2. C
364.	30/07/2004	2004.07.30 Javi PPP report towards the final version.txt	Project 2. Outputs & reports. Email	1	Javi sends out the latest version, all proof-read	It becomes clear that breaking the report into pieces so each one does one bit, tends to make the whole process slower. Not sure whether better quality	Javi	4.2.C
365.	01/08/2004	2004.08.01 P20 attempt to exec summary.txt	Project 2. Outputs & reports. Email	1	P20 sends first version of new exec summary (4 pages long)	Notice the comment "Here is my first stab. It needs work but at least its a beginning."	P20	4.2.C
366.	02/08/2004	2004.08.02 P19 Fwd comments on PPP Exec Summary	Project 2. Outputs & reports. Email	1	P19 sends comments to P20 exec summary. Two options are posed: a 1-page vs. 4-page summary	The 4-page summary become the preferred option	P19	4.2.C
367.	03/08/2004	2004 08 03 PPP Final report v13.1.doc	Project 2. Outputs and reports	33	Version 13.1 of the report	Minor changes. Incorporates the executive summary	All	4.2. C
368.	03/08/2004	2004 08 03 PPP Final report v14.doc	Project 2. Outputs and reports	34	Version 14 of the report	Introduces the long executive summary	All	4.2. C
369.	03/08/2004	2004.08.03 A7 advocates a short PPP Exec Summary	Project 2. Outputs & reports. Email	1	A7 recommends a shorter, punchier version of the PPP executive summary	A shorter version could facilitate reading the report	A7	4.2. C
370.	03/08/2004	2004.08.03 Javi sending extra PPPmaterial tables etc.txt	Project 2. Outputs & reports. Email	1	Final pack of materials sent: tables, etc.	These materials were made available for attendees upon request.	Javi	4.2.C
371.	03/08/2004	2004.08.03 P19 comments on PPP Exec Summary.txt	Project 2. Outputs & reports. Email	1	P19 Condenses the exec summary to just 2 pages	That seems to be the minimum given that the model figure in going in	P19	4.2. C
372.	17/09/2004	2004.09.17 P20 last comments exec summ. after CEOs comment.txt	Project 2. Outputs & reports. Email	1	Last one of the discussions before sending to print.	The CEO suggested writing a longer exec summary, which happened.	P20	4.2.C
373.	18/09/2004	2004 09 18 PPP Executive Summary final.doc	Project 2. Outputs and reports	5	Executive summary for the report	The final version contained all the dimensions and the model	All	4.2. C
374.	04/10/2004	2004 10 04 PPP Final report v15.doc	Project 2. Outputs and reports	37	Version 15 of the report	Last edit of the document with numerous minor changes.	All	4.2. C

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
375.	17/11/2004	2004 11 17 PPP Final report LAST VERSION	Project 2. Outputs and reports	40	Last version of the report in word format.	Main change is the referencing style which is numbered	Javi	4.2. C
376.	29/11/2004	2004 11 29 PPP Final report FINAL version to print.pdf	Project 2. Outputs and reports	44	Final version of the report. Professionally formatted. The first version was produced on the 4 Nov 2004. In total eleven moths have been employed to agree the final version.This version had to be proof read a number of times to ensure consistency of referencing and quotations.	Final title: Managing Public-Private Partnerships. Research Report. Structure: Executive summary, Preface, 1. Introduction, 2. A dynamic model of public private partnerships, 3. Designing and organising the partnership. 4. Developing and managing the relationship, 5. Conclusion. 6. Appendix 1: members of the expert panel. Appendix 2: research methodology and process. Appendix 3: sources included in the systematic review. Appendix 4: research forum delegates. Appendix 5: questions posed at the research forum.	All	4.2. C
377.	15/09/2006	2004.09.15 report to print and 2nd PPP phase.txt	Project 2. Meetings and comms. Email	1	Confirmation of A7's conversation with P20 where it is confirmed a 2nd phase for PPP and that the Exec. is happy with the centre.	Key email. None of the 2 things happened	A7	4.2. A

Project 3. AssM

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
378.	27/02/2003	2003 02 27 AssM Field notes Meeting 0.doc	Project 3. Meetings and comms. Notes	7	This are the notes from the very first (almost preliminary meeting)	Key document. Interesting discussions about the potential research question. "The question should be interesting enough to attract clients' interest, otherwise they are not going to spend time with us" (AM24). An initial phasing is "Are organizations maximizing the link between asset management and service delivery?"	Javi	4.3. A
379.	21/07/2003	2003 07 21 AM24 launching the forum & dates for 1st meet.txt	Project 3. Meetings and comms. Email	1	AM 24 tries to organise the first AssM meeting	AM24 states "given MCompany's wide involvement in Asset Management, this will be a great chance to repeat the same success" (referring to the PPP and HRO forums)	AM 24	4.3. A
380.	04/08/2003	2003 08 04 Field notes AssM meet 1.doc	Project 3. Meetings and comms. Notes	5	Asset management. Notes from the first meeting.	Key document. Two of the agenda items were: a. Understand what MCompany-Cranfield is aiming to achieve. b. Understand what our forum will aim to achieve. Different objectives of the two organisations are recognised.	Javi	4.3. A
381.	04/08/2003	2003 08 04 MC asset management forum agenda.doc	Project 3. Meetings and comms. Actions and agendas	1	Agenda for the meeting	Review of objectives and the MCCentre approach is presented.	AM 24	4.3. A
382.	23/09/2003	2003 09 23 A7 notes from the 23sept2003 meeting.doc	Project 3. Meetings and comms. Notes	2	A7'notes from the meeting	The key aspects noted are: 1) Lack of literature on AssM. 2) Focus on stakeholders. 3) Focus on key industries. 4) Focus on stakeholder's demands and organisational responses.	A7	4.3. A
383.	23/09/2003	2003 09 23 Field notes AssM meet 2.doc	Project 3. Meetings and comms. Notes	4	Notes from the meeting (small group)	The question is refined and a way forward defined: identify stakeholders demands -> see the context -> look at the response -> analyse outcome -> synthesise lessons across sectors	Javi	4.3. A
384.	23/09/2003	2003 09 24 Notes from the AssM meet 23 Sept 2003.txt	Project 3. Meetings and comms. Email	1	A7 & AM24 emails building on the latest discussions	Key email. This message is interesting as it reflects some of the difficulties experienced. In particular, AM24 claims: "we do have a difficult task ahead of us, but I think we clarified the outstanding issues and can have a clear debate with the rest of the forum on Monday". A7 answers: "It is important that you choose a question that is: (1) relevant to MCompany (+clients). (2) is of interest to participants. (3) can be researched. You will have great difficulty if any one of these are missing! This is the hardest part of the process and we must get it right if we are to succeed"	A7 & AM 24	4.3. A

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
385.	29/09/2003	2003 09 29 Field notes AssM meet 3.doc	Project 3. Meetings and comms. Notes	2	Notes from 3rd meeting	Identifying a suitable question proves to be very difficult. People rely extensively on experience which may not be the most researchable option.	Javi	4.3. A
386.	29/09/2003	2003 09 29 MCC AssM Pre-Meeting Notes.ppt	Project 3. Meetings and comms.	6	Question and future approach	States what the problem is in terms of lack of available material, and potential ways forward	AM 24	4.3. A
387.	29/09/2003	2003 09 29 Pre-meeting notes - AssM Forum.txt	Project 3. Meetings and comms. Email	1	AM24 sends two documents for review in preparation to the AssM forum	Sent on the same day as the meeting	AM 24	4.3. A
388.	29/09/2003	MCC AssM Pre-Meeting Notes 290903	Project 3. Asset management – Meetings and communication	7	A presentation to review progress to date and offer new alternatives and perspectives	In this presentation the research question of the asset management forum is revisited in light of the lack of results of initial searches. New directions are set trying to investigate using a mini case study approach stakeholder demand Context ->Organisational Responses -> Outcomes.	AM 24	4.3 A Print
389.	14/10/2003	2003 10 14 AssM - Keywords and search results.xls	Project 3. Outputs and reports	8	Contains details of all the searches performed and databases used for the asset management area	This area proved difficult in terms of retrieving interesting references	Javi	4.3. C
390.	15/10/2003	2003 10 15 AssM References phase 2.doc	Project 3. Outputs and reports	5	Title and abstracts of the references retrieved are presented	This document contains references of the second 'wave' of searchers which contained specific firms searches	Javi	4.3. C
391.	16/10/2003	2003 10 16 Inputs to the AssM discussion.txt	Project 3. Meetings and comms. Email	1	Javi emails two papers: 1) On OR and 2) why research can add to practice	Initial exploration of the OR concept. Attaches the original papers + summaries	Javi	4.3. A
392.	17/10/2003	2003 10 17 Our understanding of your problem and need.doc	Project 3. Meetings and comms.	3	This paper position debates held within the Asset management team.	Outlines the limitation of the existing approach and points at different options to take this research further. "Ideally the research would locate studies of organisations that have responded competently to changing stakeholder demands with effective asset management strategies"	A7	4.3.A
393.	21/10/2003	2003 10 21 MCompany AssM Review Protocol v0.1.doc	Project 3. Outputs and reports	15	Former version of the protocol with text and details of the project	Working document	Javi	4.3.C
394.	10/11/2003	2003 11 10 Field Notes Conference call AssM.doc	Project 3. Meetings and comms. Notes	1	Notes from the conference call	The argument as it stands reads (1) long term view of asset is now the way forward for asset owners, (2) it is impossible to predict every situation that may happen and anticipation and scenario planning is not enough therefore (3) organisations need to become resilient	Javi	4.3. A
395.	21/11/2003	2003 11 21 Calling the 24Nov2003 meeting.txt	Project 3. Meetings and comms. Email	1	Email confirming next meeting. Read the comment on the right	"I'm hopeful that the proposed question and approach will be one which we can agree and therefore move ahead with. I do want to have a good debate though to see how well the proposition stands up - bring your thinking heads" (AM24)	AM 24	4.3. A

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
396.	24/11/2003	2003 11 24 Field notes AssM meet 4.doc	Project 3. Meetings and comms. Notes	6	Notes from the 4th meeting	Although the question still proves to be difficult, it has evolved into "How can asset owners develop an asset management strategy that is sustainable in the long term and enables successful responsiveness to changing stakeholder requirements?"	Javi	4.3. A
397.	24/11/2003	2003 11 24 MC asset management forum agenda (21/11/2003)	Project 3. Meetings and comms. Actions and agendas	1	Agenda for the meeting	Key items are: 1. Review current position and proposed question. 2. Debate and agree the way forward. 3. Specify research to be undertaken. 4. Determine schedule of deliverables and milestones.	AM 24	4.3. A
398.	24/11/2003	2003 11 24 MC asset management forum position paper.doc	Project 3. Meetings and comms. Actions and agendas	4	Position paper for the meeting	Summarises previous discussions and points at potentially fruitful new directions	AM 24	4.3. A
399.	24/11/2003	2003 11 24 Minutes - Asset Management Forum.doc (28/11/2003)	Project 3. Meetings and comms. Actions and agendas	2	Minutes from the meetingq	Four key aspects are captured: current position, the way forward, the research to be undertaken, and schedule of deliverables and milestones	AM 24	4.3. A
400.	12/12/2003	2003 12 12 Meeting Postponed - AssM forum.txt	Project 3. Meetings and comms. Email	1	Email confirming the postponement of the meeting.	One of the reasons adduced is "not all of the actions agreed at our last meeting have been completed due to other commitments and pressures on the research team" AM24	AM 24	4.3. A
401.	06/01/2004	2004 01 06 AM24 announces his departure.txt	Project 3. Meetings and comms. Email	1	AM24 announces his departure planned for the 26th January 2004	Note his comment "personally I've found it challenging but very enjoyable"	AM 24	4.3. A
402.	12/01/2004	2004 01 12 Resilience - Scoping Study.ppt	Project 3. Outputs and reports	15	A presentation with key concepts and themes from the scoping study	Outlines key concepts and examples of OR	Javi	4.3.C
403.	18/01/2004	2004 01 18 A2 confirming A7 AM28 taking over AssM.txt	Project 3. Meetings and comms. Email	1	A2 confirms that a new forum leader and sponsor will be appointed and will take over.	Key mail that opens the way forward after AM24´s departures	A2, A7	4.3. A
404.	21/01/2004	2004 01 21 MP AssetM Rev Protocol v1.0.doc	Project 3. Outputs and reports	3	Earlier versions of the protocol (v1.0)	Working document	Javi	4.3.C
405.	21/01/2004	2004 01 21 RESILIENCE Keywords and Search results.xls	Project 3. Outputs and reports	10	Contains details of all the searches performed and databases used for the new approach on resilience	5 Databases, 24 Key words, 60 Searches, 364,848 References retrieved, 203 References filtered	Javi	4.3. C
406.	23/01/2004	2004 01 23 The case for ORG RESILIENCE in AssM.doc	Project 3. Meetings and comms.	3	Articulates the case for using resilience as the focus of the Asset management research.	Builds on discussions from the forum and uses H8's formula situation->complication->question	A7	4.3. A

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
407.	23/01/2004	The case for ORG RESILIENCE in AssM.doc	Project 3. Asset management – Meetings and communication	3	Sets out how organisational resilience can inform the activities of the Asset management forum.	After the initial problems this was seen as the way forward	A7	4.3. A print
408.	02/03/2004	2004 03 02 MP AssetM Rev Protocol v1.1..doc	Project 3. Outputs and reports	3	Final version of the protocol (v1.1) 'Developing sustainable, responsive asset management strategy through organisational resilience'	What are the characteristics of organisations that manage a strategy that is sustainable in the long term and enables successful responsiveness to changing stakeholder and external context requirements?.	Javi	4.3.C
409.	04/03/2004	2004 03 04 Resilience - overview & progress v0.1.ppt	Project 3. Meetings and comms.	11	Earlier version of the document of same date	Working document	Javi	4.3.A
410.	04/03/2004	2004 03 04 Field Notes AssM meet5.doc	Project 3. Meetings and comms. Notes	1	Brief notes from the meeting with AM28 who takes over the leadership of the forum	This is basically an update meeting.	Javi	4.3. A
411.	04/03/2004	2004 03 04 Meeting with AM28 & briefing.ppt	Project 3. Meetings and comms.	11	Briefly describes how the research has evolved and sets out the new starting point.	The question at that stage was: "In complex, unpredictable and changing environments how do organisations ensure sustainable business performance and survival?" Contains cases of Organisational Resilience and a brief explanation of the concept and dimensions	A4, A7 Javi	4.3. A
412.	14/10/2004	2003 10 14 AssM Progress Report Searches 2.ppt	Project 3. Meetings and comms.	4	Reports on the results of searches using specific company names	This short presentation spells out the	Javi	4.3. A

Project 4 PFI

No.	Date	File name	Type of document	Pgs	Description/Title	Comments	By	In
413.	04/12/2002	2002 12 04 Notes of PFI forum meeting 1.doc	Project 5. Meetings and comms. Actions and agendas	1	Notes from the 1st PFI meeting	At this meeting it is considered whether to focus on (1) Improving the effectiveness of the bid process or (2) The business case for PFI. Attended: A6, A2, A3, A5, A10, PFI2, PFI3, PFI4, PFI5, PFI6The two potential questions as they stand are: (1) Improving the effectiveness of the bid process and (2) The business case for PFI	A7	4.5. A
414.	28/01/2003	2003 01 28 PFI meeting 2 notes.doc	Project 5. Meetings and comms. Actions and agendas	2	Notes from the 2^{n} PFI meeting	Overall a difficult meeting with unclear purpose and outcomes. It seems like the way forward is (1) What are the alternatives to PFI? (2) What does make a successful PFI? And (3) Are there measurable benefits to PFI?	Javi	4.5. A

Appendix D. Example of coding

PROJECTS
- 1 HRO
  - 1 Practices
    - +ENABLERS- Practices HRO
      - +the setting of deadlines
      - +HRO was well exploited
        - Good internal dissemination
        - applications in bids & other
      - ++- Key events
        - JM events to add
        - Severn Trent lost opportunity
        - Workshops with Gas & HA
        - ICE Jan 2004
        - workshop with HA
        - H15 at LG commission
      - promotion of engaged debate
        - second level posession
        - and reason is see CONTENT
        - draw together differnt perspectives
    - -BARRIERS - Practices HRO
      - - lost momentum in ocassions
      - - need to reconcile events& research
      - - more follow through
      - -lack of resources & time
      - -Long implementation-sell process
        - more meetings and shared vision
        - -need cont redef of meaning
        - - need adaptation to be applicable
        - - needs adaptation to suit context
  - 1 Content

1 Content
- +-no clear the hows to
- +ENABLERS Content HRO
  - +credible huge amount of research be
  - +-Involves radical change
  - + HRO perceived RELEVANT
    - + what does it mean for me
    - + linked to own background
    - + Related to your current job
    - + Contains exampl peop can relate to
    - +Applicable ~to MP & clients~
      - related to a real issue that clients
      - +hook, tool to enter into new client
      - useful for my client
      - + Sellable
      - + an idea with potential
      - + Usable
    - can quickly see practical results +
    - + topical & timely
  - + perceived 2 be INTERESTING
    - +fascinating & fantastic
    - +has key messages -eg failure free
    - +underst why orgs were sucessf
    - +exciting
    - subtle familiar-innovative message
    - touches on things I've thought
    - + perceived new and novel ideas
    - + fitted both C and MP agendas
    - + Intellectually stimulating raises
    - +sexy topic
    - +offers new perspectives ~read~
    - +different & unique

1 People
- +ENABLERS- People HRO
  - + H8 the owner to drive it forward
  - + Cranfield's input critical
  - + A4 translator into digestible form
  - + H8B, H9, H10 contribute
- -BARRIERS - People HRO
  - - A2 lack of involvement
  - - A3 the starter but not involved
- Perceived sucess
  - success
  - could have been better
- how HRO III was done
  - -Initial interest and trigger
  - implentation in Hertfordshire
  - anticipating difficulties
  - undertanding the concept
  - seek the hows to
  - uncertainty of phase 3
  - Expected more
  - value method to avoid error
  - make HRO different
  - project focus not politics
  - flexibility to adapt content
- 2 PPP

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Appendix E. Table of constructs

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
1. Tangibility	Tangible (x4); material, summative (hard and objective); tool-methodology; concrete (facts, visible, touch); objective; tool (x2), methodology; doing; physical artefact.	Intangible (x5); feeling; formative (subjective & implicit); beliefs; subjective; belief, feeling; concept; thinking; social artefact.	11.81	13	A2, A3, A5, A7, H11, H14, H15, P20, AM28, H11, P23, A3, A6.	The extent to which the nature of the idea and its implementation is concrete (it does not refer to the results, which may be very tangible). Doing broadly refers to specific tools and techniques as opposed to thinking which addresses aspects of diagnosis, and design of procedures and systems.	"Something that you can touch and feel as opposed to a service. You can have a tangible service like a road that you can maintain as opposed to management training that is less tangible" (A2). "Intangible are related to processes rather than physicality" (A3). "It is almost visible in many ways, If you're explaining any of these concepts to somebody not coming form this sort of management theory … you would be able to succeed more readily with the tangible ideas, almost take them and show somebody an example of them" (H15). "Material is an object that is visible, it is a unit, it's quantifiable. Feeling is internal, you cannot see it, or capture it" (A5). "You could argue AssM is the management of tangible pieces; PPP is the management of tangible inputs, and HRO is softer in terms of its structures" (A4). "This is a tool that you use, whilst the other is more an approach that informs what you do" (P23).
2. Relevance/interest	Relevant (x3), interesting (x 2), exciting; highly relevant to current work; applicable; interesting because is aligned to our work; directly applicable (to my business); high personal interest (related to professional background); close to your experience.	Dry, not applicable too specific; boring (x2), irrelevant (x2), dull; low relevant; not relevant; not aligned to our work; not directly applicable (to my business); low relation to professional background; far from your experience.	13.43	11	A4, A5, A6, A7, H8, AM24, P21, AM28, H15, AM24, AM27.	The extent to which the idea is perceived to be relevant, attracts the attention and curiosity of the person, and triggers his/her interest in knowing more about it. It also indicates how related the idea is to the individual's professional background and own professional development.	"It is interesting because it is about bringing improvement through personal change … as opposed to this one which is just about measuring it" (A5). "Something relevant and interesting to a particular situation is that it fits it directly. I am interested in supply chain management because is something that will inform my interaction with clients at this moment in time. It is specific to a certain client. HRO, I am interested in it because is useful for all clients" (A4). "If you look at the organisations involved in HRO and resilience, there is something exciting about the organisations involved" (A6). "This (serviceability) is interesting to me because it is more aligned to the sort of work that we undertake and is also aligned to prospects of future work as well" (AM28). "These are all relevant to consultancy and MCompany has done all of them at some point, but the two red (PPP and HRO) are the ones I believe have a more direct application to my unique sphere of work, these two could become big" (H15). "I would say it is related to my own professional background" (AM24).

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
3. Novelty	Perceived to be new; novel; new (x4), fresh, provides new thinking; innovative; innovation; Challenging (x2); mind stretching, ground breaking, doesn't fit paradigms; highly controversial; contentious, unaccepted, management fad.	Perceived to be old; existing established thinking; stagnant, stale; established practice; repetitious; standardisation; confirmatory; fits within a paradigm; received wisdom accepted & taken for granted; established, management fundamental.	8.78	11	H8, H12, A7, P23, AM28, A6, A5, H8, H14, H15, AM24.	Indicates the extent to which ideas have not being heard before, and its arguments result novel and innovative. It also captures the extent to which the idea questions existing knowledge about a specific area. Also refers to how popular the idea is.	"The opposite of dull is innovative; continually looking to improve…innovation is the thing that gets you up in the morning" (AM28). "These things are not new, they have been established in the UK for the last 15-20 years, they are well documented" (P23). "New really or… new and … unaccepted, perhaps still being debated… I suppose newer things tend to fold into that category. Perhaps more contentious things" (H15). "Challenging is something that implies an alternative approach to what have previously been done, its challenging the norms" (A5).
4. Socio-technical	Systems (x2); processes (x5); technology; Infrastructure, assets (x2); hard mechanisms.	People (x6); soft behavioural; relationship dependent; human; organisational processes.	9.33	10	A2, A4, A6, H8, H11; H12, P20, P21; P23, AM25.	The extent to which the the idea relates to people as opposed to systems and processes.	"Processes would be bringing a new way of people working, and people would be around training people up" (A4). "Some of these are social systems interventions and others are technical – structural" (A6). "Some are concerned with the way people interact and behaviours, and these others are to a large extent processes that the organisation inherently understands" (H12).
5. Internal-external focus	Client focused (x3); external orientation; externally focused, client led; market & outward looking; client driven.	Internally focused (x3); internal orientation; company-focused; consultant lead; internal organisation; partnership driven.	12.03	8	A5, H11, P20, AM25, AM27, A5, P20, P21.	Refers to whether the idea is used or implemented within the consultant's organisation or in a client organisation. It also specifies who drives the idea, whether the consultant or the client.	"If it is internal it means that you apply it to your own organisation. If it is external, the outcomes are to the benefit of other organisation" (H11). "One of the great thing about the centre is that it was market leading ideas coming from us, rather than the market identifying it and driving what we wanted to do" (A5).
6. Definition	Highly defined (x2); defined boundaries; defined; tightly (x2) & precisely defined; specified; well defined.	Open (x3), wider; conceptual; undefined; intuitive; less defined (x2); open to interpretation; ill defined.	11.42	8	A4, H8, H11, H14, H15, P21, P23, AM25.	Describes the perceived level of detail of the idea, and whether its principles and arguments are specifically described.	"Open to interpretation means that an idea is vaguely defined, as opposed to close interpretation, and what I would mean by that is something that is more tightly or precisely defined" (H15).

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
7. Measurability	Measurable; measurably objectively; easy to measure (x5).	Difficult to measure (x6); measurable subjectively.	12.22	7	A4, A5, H8, H11, H15, P20, AM28.	This construct means that the outcomes that result from applying the idea or applying the idea itself are measurable or easy to assess.	"Quantifiable in some ways, observable, quantifiable, particularly with numbers" (H15). "Supply chain management is tangible, I am going to do my supply chain in this way, you can quantify and immediately measure how that is going" (A4). "PFI and benchmarking are somewhat to do with measurement, and numbers, whereas business transformation is actually very hard to measure… you can measure some objectively" (H8).
8. Means-ends	Organisation, means (x5); defines the 'hows'; input (x2).	Business, ends (x5); defines the 'whats'; output; outcome.	11.00	7	A6, H11, H12, P21, AM24, AM27, AM28.	Means are approaches and methods to achieve a result (end) that is different. Means are also understood as inputs to a process designed to reach an outcome.	"Business models are about ends and organisations are about means. Organisations is how you do it, business models is what you are trying to do" (A6). "A means is a way of doing something, like business transformation is a process to get to one of these things, like HRO" (AM24).
9. Nature of change	Dynamic (x2); change, evolving (x2); changing (x2), transforming.	Static (x2); stability, design; maintaining (x2); fixed.	10.96	7	A3, A5, A7, H8, H11, P21, P23.	Dynamic relates to ideas which elements involve change. Static refers to ideas which aspects remain largely unchanged, and the focus is about maintaining.	"Change is about transforming things and different ways of organising, improving delivery. Is about taking you forward. Stability is knowing where you are (in terms of your assets)" (A5). "Maintaining keeps the things the same. Improving or changing introduces new elements" (H11).
10. Level of analysis	Personal (x3); individual (x3).	Organisational (x4); organisation wide; collective.	11.86	6	A3, A4, A5, H11, H15, AM24.	The emerging construct refers to ideas that are focused on individuals whereas the pole refers to ideas that are applied to entities such as groups or organisations.	"These have more meaning to people as individuals, whereas that would be organisational-specific" (H15). "Personal or individual is what drives the individual, as opposed to the corporate… it is personal drivers as opposed to corporate objectives" (A5). "All have an individual and organisational element but I guess, where you implement it, the star point, is the start point an individual or an organisation?" (A4).
11. Scope	Common, popular; widely used; general; holistic (x2); multi function.	Specialist (x2); limited; specific; focused & narrow (x2); single function.	10.64	6	H15, P23, AM24, P21, AM27, AM24.	The extent to which a non-specialist would be able to understand something about the topic. Designates the breath of applications of the idea.	"You, A7 and me, we have read the odd management textbook but if I stopped someone in the high street how many of these ideas mean something to them and how many wouldn't? I'm thinking academic tools that have passed into the general wider sphere of knowledge in that sense" (H15). "I would read about the idea to do this and that but to have a broad understanding of the issue" (AM27).

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
12. Generalisability	Context specific (x2); specific sector, context dependent.	Generally applicable, cross sector, general; context independent.	18.19	4	A2, A4, A6, P23.	The construct indicates the extent to which the idea is applicable to a range of organisations operating in a number of sectors. It also refers to an idea that has a more direct application to the consultant's unique sphere of business.	"Leadership is generally applicable, it is important for the success of all organisations, whereas managing diverse organisational cultures is context specific" (A2). "These are cross sector so wider relevance, this is only public sector" (A4).
13. Stakeholder involvement	High number of orgs involved; managing across organisations; inter-organisation (multi-org); high number stakeholders.	Low number of orgs involved; managing one organisation; low number of stakeholders.	13.84	4	A2, P23, AM24, AM27.	This construct refers to the number of stakeholders involved during the implementation of the idea.	"In PFI you may have banks, contractors, builders, etc. whereas in the outsourcing you can have one organisation as the sole supplier" (A2).
14. Temporal	Long term relationships, long implementation time; long term focus; long term sustainable effectiveness.	Short term (expected outcome); short implementation; short term focus; short term efficiency.	10.73	4	A2, A6, AM27, A7.	Refers to the time horizon that underpins the implementation of the idea.	"In some of these less tangible outcomes, the issue is that people seem to behave to meet short term objectives rather than long term strategic requirements, for instance succession planning people know they should do it but they don't because of day to day pressures" (A2).
15. Managerial-financial	Related to people & processes; organisation design; cultural nature; service focused.	Funding and finance; finance nature (x2); commercially focused.	10.70	4	A7, H14, P20, A3.	The degree to which the idea involves the management of monetary as opposed to non monetary resources.	"These are about different ways of funding work, whereas this is a concept about how to run an organisation which produces more reliable outcome" (H14).
16. Complexity	Complex; difficult to understand (x2).	Simple; simple structures; easy to understand (x2).	10.70	4	A2, A6, H8, H14.	Points to the perceived degree of complication and intricacy of the idea.	"You can run a PPP or a PFI if you have sorted out relationships between the public and the private sector. But cannot do that if you are going to adopt a serviceation strategy, because you can probably be multiple layers and international, so it has got more complex structures" (A6). "I heard about it, I looked at it, I've learnt the subject and I can tell you yes, I am doing 90% of this. It is easy to tell if you are doing it" (H8).

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
17. Focus on failure vs. success	Avoiding failure; improving low performance; maintaining status quo; maintaining..	Achieving success, making things better; sustaining high performance; business enhancement; improving, optimising.	9.58	4	A3, A7, AM25, AM28.	The extent to which the idea is conceived to improve some current practice, as opposed to preventing undesired events from happening.	"You see starting from here you would say I would like to do something better, not matter how you measure it. This is I can't afford to do anything worse" (A3).
18. Compliance	Discretionary; desire (voluntary); choice and free will.	Must an essential requirement; requirement (duty or prescription); imposed (by external environment).	13.51	3	A2, P23, H12	Refers to the degree to which the implementation of the idea is essential, voluntary or obliged for the running of an organisation.	"You can't do asset management and implement business transformation without leadership. Some are essential agenda items for an organisation some others aren't" (A2). "Some of these the organisation is having to react probably to external market forces, or government initiatives… this other the organisation fixes it up on its own free will" (H12)
19. Collaboration	Frequent personal relationships; collaboration; relationships are critical.	Sporadic personal relationships; independence; relationships are not critical	13.07	3	AM25, A5, AM28.	Designates the nature of the relationships needed to make the idea work.	"PPP is all about collaborative type of working, as opposed to actions that would be taken in isolation, somebody would be affecting that" (A5).
20. Repetition	Longitudinal; capability improvement; management of the organisation.	Discrete; one off project (x2).	12.38	3	A3, A4, AM25.	Refers to an idea that is applied in one moment in time as opposed to an ongoing basis.	"These are about developing or increasing capability, and this is about managing a specific project. So this is about making what you've got better and this is about making what you've got work" (A4).
21. Strategic orientation	Tactical (x3).	Strategic (x3).	11.89	3	H12, P21, AM27.	Strategic refers to broader, cross organisational issues whereas tactical is related to day-to-day operational issues.	"Cost transparency and Six Sigma cannot be applied at a high level. The level of detail of these, by their very nature is quite tactical" (P21).
22. Flexibility	Fixed components; fixed process.	Flexible components; flexible.	12.62	2	A3, H12.	Some management ideas have some inherent components that cannot be changed or ignored, whilst others can be implemented in a number of ways.	"I would say PPP is a fixed process whereas for these there are a number of strategies you can use" (H12).

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
23. *Creativity*	Lateral thinking; creative, enables the creation of new perspectives.	Mechanical thinking; not creative.	12.13	2	A3, H8.	Refers to the way in which the idea is conceptualized and the thought processes that underpin its application to real settings.	"Mechanical thinking is rule bound, it's got single input and perhaps reliable output, you know what's going to happen each time, but if you are running a lateral thought process, you may have the same input stimulus but you can't predict what the outcome is going to be on a regular basis. Lateral thinking is about making connections between apparently unrelated things and events" (A3).
24. *Investment required*	Large amount capital investment; capital expenditure.	Low amount to invest, operational expenditure.	11.61	2	A2, AM25.	Refers to the level of funding that is required to implement the idea.	"The biggest difference is the amount of funding coming in. In a PFI deal, there tends to be tens of millions of pounds worth of investment in initial capital" (A2).
25. *Associated risk in innovating*	Has certain degree of risk (to innovate); high impact if failure.	Stays the same, secure, stable; low impact if failure	10.08	2	AM28, AM25.	Relates to the level of risk involved in implementing the idea (particularly, innovative ideas) and the resulting impact if the idea fails.	"You can look at the balance between risk and innovation. The regulator is constantly looking at companies to be more efficient, and the way they're going to that is through innovation. But innovation by definition is risky" (AM28). "These have low risk if you fail to deliver... if any of these go wrong, they go wrong big time. They have big financial and organisational impact" (AM25).
26. *Theoretical-applied*	Are still in theory; theoretical not applied.	Working in practice; applied.	9.70	2	A4, P20.	The degree to which, in relation to the idea, academia is ahead of practice or vice-versa.	"If you sit in a room some PPP and PFI experts and academics the PFI/PPP guys are the ones that can bust that conversation. You sat them down on OD, HRO, you would probably have to hand it to the academics" (A4).
27. *Locus of capability*	Internal capability (x2).	External resources capabilities (x2).	7.97	2	H12, P20.	Denotes whether the organisation posses the capability to develop and implement the idea.	"In some legal aspects we don't have the knowledge so we use external advisors" (P20).
28. *Type of value generated*	Wider value (organisational, social); social value.	Financial value (x2).	7.087	2	A4, AM27.	Distinguishes whether the idea is focused on generating profit or other benefits.	"PPP, PFI are about value but in terms of financial value rather than organisational value" (A4).
29. *Personal development*	Not relevant to personal development.	Relevant to future personal development.	15.21	1	AM24.	Implies that getting involved in the idea may offer opportunities for professional development.	"It will make better what I do" (AM24).
30. *Usage*	Widely used.	Infrequently or rarely used.	14.22	1	H15.	Refers to how widely the idea is used by the management community.	"In my mind the black things (PFI, buss transformation) are more ready, more accepted, management tools, the others are…less likely to be used because there are not part of everybody's domain" (H15).

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
31. *Management support*	Empowered nature.	Senior management sponsorship.	12.97	1	H12.	Refers to how widely the top levels of the organisation are committed to the implementation of the idea.	"These two require lots of involvement of the senior management team, what I call sponsorship, and this doesn't need to be led from the top…it is about empowered change" (H12)
32. *Social impact*	High social impact	Low social impact	11.68	1	AM25.	Indicates the potential social impact of making (not making) the idea work.	"This area has a huge social impact" (AM25).
33. *Problem-solution focus*	Solution-focused	Problem -focused	11.17	1	AM28.	Represents the extent to which the idea is oriented towards diagnosing problems or finding solutions to detected issues.	"What in fact you're doing, that is perhaps giving you the problem (data analysis), and these are enabling you to solve that problem (HRO & AssM)" (AM28)
34. *Origin*	Conceived in business.	Conceived in academia.	11.08	1	H15.	Relates to the origin of the idea as perceived by the user.	"I am looking at where the idea was born or first sort of conceived. I can imagine these being ivory towered, theory and white boarded, and this one a managing director looking at the sales growth going downwards" (H15).
35. *Perceived effectiveness*	Highly effective.	Ineffective ideas.	10.92	1	H14.	Refers to the degree to which the individual perceives that the idea is effective in achieving its purpose.	"Some ideas may become very fashionable but they are actually useless" (H14).
36. *Closeness to personal values*	Close to my values.	Remote from my values.	10.61	1	H14.	Indicates whether the nature of the idea is related to individuals' personal values or not.	"How you perceive these ideas is based on your prejudices and preferences. I know that personally I have very strong ideas about things, I know that they exist and affect the way I think" (H14).
37. *Scale of change*	Large scale change.	Small scale change.	10.03	1	A6.	Points at the magnitude of change that the idea comprises.	"HRO, PPP and BussT, all bring about comprehensive change, large scale change, organisation wide change" (A6).
38. *Connotation*	Positive connotation (personal wellbeing & satisfaction).	Negative connotation.	9.96	1	P21.	Perception of the extent to which the idea considers people's "well being".	"You could argue that downsizing is a very negative concept, whereas cost transparency is positive" (P21).
39. *Forward looking*	Anticipation and forecasting.	Learning from the past.	8.95	1	P20.	Relates to the extent to which the idea is forward looking as opposed to backward looking.	"Scenario planning is something about effectively thinking through real live situations and thinking 'what if' whereas organisational learning and sustainable growth could well be said to be this is where we're going, this is what we need to learn from our past… it's about learning from previous experience as opposed to forecasting" (P20).

Construct/attribute	Emerging	Contrast	Varia-bility	Men-tions	Who	Explanation	Quote
40. Implementation approach	Bottom up.	Top down approach.	8.81	1	A6.	Points at whether the implementation approach is driven by the management team or by the operational levels.	"Coaching/mentoring starts with the individual, it is inductive rather than deductive, to make a series of local changes and it adds up to something whereas cultural change you start the other way around" (A6).
41. Learning needed	Strong need for learning.	Little need for learning.	8.65	1	H12.	Refers to the learning required to successfully implement the idea.	"AssM and PPP don't a training aspect to them, whereas business transformation is significantly training orientated. There is an educational and training interest in this but not in the others" (H12).
42. Profitability	Increasing profit (by margin).	Reducing costs.	7.85	1	AM27.	Speaks of the approach to achieve profits.	"Brand management is about increasing income, sales. The other two are about managing outgoings, about costs, operating more efficiently, it's about reducing costs" (AM25).
43. Hazard of the environment	High hazard environments.	Low hazard.	5.21	1	A7.	Means that the idea is normally implemented in organisations that operate in a context of certain hazard	"One's traditionally been in local government, NHS, education, so focused on public services, whereas the other one has been in high hazard environments, so you would say one is a low risk one is a high risk environment" (A7).

NOTES: 1.) Average mentions: 3.70; average variability: 11.08

     2.) Constructs mentioned by different people are separated by ';'

Appendix F. Inter-coder reliability check

Iteration 1

Initial Construct/attribute	Label agreement with coder DD	Label agreement with coder MF	Agreement between coders	New label / grouping after coder's input
People relatedness	No	Yes	No	socio-technical
Relevance	No	No	Yes	
Tangibility	Yes	No	Yes	
Level of definition	Yes	No	No	Definability
Measurability	Yes	Yes	Yes	
Means to ends	No	No	No	Input-output
Change	No	Yes	No	Degree of change
Level of analysis	No	Yes	No	
Novelty	Yes	No	No	
Recipient	No	No	Yes	Internal-external focus
Sector-dependency	No	No	Yes	Generalisability
Number of organisations involve	Yes	Yes	Yes	Stakeholder involvement
Conceptual level	No	No	No	
Time horizon	No	Yes	No	
Financial nature	No	No	No	Managerial-financial
Focus on failure vs. success	Yes	No	No	
Controversy	NA	NA	NA	Grouped with 'Novelty'
Nature of personal relationships	No	No	No	Collaboration
Continuity of application	No	No	No	Repetition
Strategic level	Yes	Yes	Yes	Strategic orientation
Domain of expertise	No	No	No	Generality A
Driver of the idea	NA	NA	NA	Grouped with 'Internal-external'
Functional scope	NA	NA	NA	Grouped with 'generality'
Professional background relatedr	NA	NA	NA	Grouped with 'Relevance'
Flexibility	Yes	Yes	Yes	
Creativity	Yes	Yes	Yes	
Understandability	NA	NA	NA	Grouped with 'Complexity'
Essentiality	No	Yes	No	Compliance
Capital required	Yes	Yes	Yes	Investment required
Complexity	Yes	Yes	Yes	
Maturity	No	No	No	Theoretical-applied
Locus of capability	Yes	No	No	
Type of value generated	Yes	No	No	
Professional development	Yes	No	No	Personal development
Usage	No	Yes	No	
Management support	Yes	Yes	Yes	
Risk involved in innovating	No	Yes	No	Associated risk in innovating
Social impact	Yes	Yes	Yes	
Focus on solution	Yes	Yes	Yes	Problem-solution focus
Origin	No	Yes	No	
Perceived effectiveness	Yes	Yes	Yes	
Personal values relatedness	No	Yes	No	Closeness to personal values
Degree of choice	NA	NA	NA	Grouped to 'compliance'
Scale of change	Yes	No	No	
Connotation	No	Yes	No	
Forward looking	No	Yes	No	Foward-backward looking
Implementation approach	No	Yes	No	
Learning needed	Yes	Yes	Yes	
Impact of failure	NA	NA	NA	Grouped to 'associated risk in innovating'
Strategy for profit	Yes	Yes	Yes	Profitability
Hazard of the environment	Yes	No	No	
Fashion	No	Yes	No	Trendiness
% Agreement between coders	48.89%	57.78%	35.56%	
Number of coincidences labels	22	26	16	

Iteration 2

No.	Initial Construct/attribute	Label agreement with coder DD	Label agreement with coder MF	Agreement between coders	New label / grouping after coder's input
1	Relevance	Yes	Yes	Yes	
2	Socio-technical	Yes	Yes	Yes	
3	Novelty	Yes	No	No	
4	Tangibility	Yes	Yes	Yes	
5	Internal-external focus	Yes	Yes	Yes	
6	Definability	Yes	No	No	Definition
7	Measurability	Yes	Yes	Yes	
8	Input-output	No	Yes	No	Means-ends
9	Degree of change	No	Yes	No	Nature of change
10	Level of analysis	Yes	Yes	Yes	
11	Generality	No	Yes	No	Scope
12	Generalisability	Yes	Yes	Yes	
13	Stakeholder involvement	Yes	Yes	Yes	
14	Conceptual level	NA	NA	NA	Group to 'Tangibility'
15	Time horizon	No	Yes	No	Temporal
16	Managerial-financial	Yes	Yes	Yes	
17	Complexity	Yes	Yes	Yes	
18	Focus on failure vs. success	Yes	Yes	Yes	
19	Compliance	Yes	Yes	Yes	
20	Collaboration	Yes	Yes	Yes	
21	Repetition	Yes	Yes	Yes	
22	Strategic orientation	Yes	Yes	Yes	
23	Flexibility	Yes	Yes	Yes	
24	Creativity	Yes	Yes	Yes	
25	Investment required	Yes	Yes	Yes	
26	Associated risk in innovating	Yes	Yes	Yes	
27	Theoretical-applied	Yes	Yes	Yes	
28	Locus of capability	Yes	Yes	Yes	
29	Type of value generated	Yes	Yes	Yes	
30	Personal development	Yes	Yes	Yes	
31	Usage	Yes	Yes	Yes	
32	Management support	Yes	Yes	Yes	
33	Social impact	Yes	Yes	Yes	
34	Problem-solution focus	Yes	Yes	Yes	
35	Origin	Yes	Yes	Yes	
36	Perceived effectiveness	Yes	Yes	Yes	
37	Closeness to personal values	Yes	Yes	Yes	
38	Scale of change	Yes	Yes	Yes	
39	Connotation	Yes	Yes	Yes	
40	Forward looking	Yes	Yes	Yes	
41	Implementation approach	Yes	Yes	Yes	
42	Learning needed	Yes	Yes	Yes	
43	Profitability	Yes	Yes	Yes	
44	Hazard of the environment	Yes	Yes	Yes	
45	Trendiness	NA	NA	NA	Group to 'Novelty'

% Agreement between coders		88.37%	95.35%	83.72%	
Number of coincidences labels		38	41	36	