



Tywoniak, Stephane and Sutherland, Janet and Galvin, Peter (2008) *Shifting the emphasis from knowledge to knowing : the hybrid public-private alliance as collaborative membrane*. In : Contemporary Issues in Public Management : The Twelfth Annual Conference of the International Research Society for Public Management (IRSPM XII), 26 – 28 March, Brisbane, Australia. □ □

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SHIFTING THE EMPHASIS FROM KNOWLEDGE TO KNOWING: THE HYBRID PUBLIC-PRIVATE ALLIANCE AS COLLABORATIVE MEMBRANE

ABSTRACT

Theories of knowledge management in alliances between competitors highlight the role of the alliance as a vehicle in a competition for knowledge. Vertical public-private partnerships face a different institutional framework where competition for knowledge gives way to cooperation.

This paper reports on a case study of the evolution of knowledge management practices in a public agency engaged in vertical outsourcing partnerships. The agency evolved its contracting towards alliances as it sought better outsourcing outcomes, this translated into new organizational arrangements where arms-lengths hierarchical processes of knowledge management was progressively replaced by horizontal, democratic processes. Underpinning this evolution was a parallel shift in thinking about knowledge, from a conceptualization of knowledge as an asset to be managed, to a view of knowledge as a tool supporting knowing in practice

INTRODUCTION

While investigating knowledge management in an outsourcing environment, we found that as public agencies in the construction sector moved from using traditional contracts towards relationship contracting, principally hybrid public-private alliances, their conceptualizing of knowledge has had to evolve to account for the shared practice and relational processes that are integral to alliances. Underpinning this evolution are changes in organisational structure to facilitate these new contractual arrangements. This sense of evolution is at the very core of alliance relationships, where partners negotiate and form a separate entity with coevolutionary consequences for trust, control and learning (Inkpen and Currall 2004).

The extensive use of contracting, and more recently alliance contracting, in the public sector is as a result of significant changes to public sector management in many Western countries since the 1980s, including Australia. These changes have not only impacted the way in which agencies carry out their mandate, but have affected the capacity to generate organisational knowledge. With the emergence of New Public Management (Pollitt and Bouckaert 2000, English 2005, English and Skellern 2005)

government agencies have pulled back their corporate boundaries through outsourcing and divestment of core activities (Young 2007). As a result, they have increasingly cooperated with other organizations, mainly private enterprise, to engage in activities and access resources (Hood 1995, Lapsley 1999, Seal 1999), including knowledge, outside their own boundaries (Grant and Baden-Fuller 2004). This mirrors trends in large industrial organizations where new organizational forms are emerging as firms roll back their boundaries through downsizing, divestment, refocussing and outsourcing (Grant and Baden-Fuller 1995). Essentially government is using contractual structures, such as strategic alliances, to replicate the vertical integration which previously existed internally (Hart and Moore 1990, Williamson 1991b).

However, while traditional perspectives suggest that in alliances between private firms, partners will compete with each other for knowledge and resources (Hamel 1991, Kale, Singh, and Perlmutter 2000), our research into hybrid public-private alliances has found that partners choose to cooperate and develop mutual knowledge sharing and learning agendas. This competition-cooperation dichotomy not only has implications for organizational structure and especially the conceptualizing of the boundaries of organizations, but it also requires us to find new ways of looking at knowledge which support this desire for shared action and recognize that knowledge in action is socially construction, i.e. it is situated in a specific historical, social and cultural context (Nicolini, Gherardi, and Yanow 2003).

Using a case study of a hybrid public-private strategic alliance, this paper explores knowledge and knowing within the alliance team environment and how this differs from processes and practices in traditional contractual relationships and within the parent organization. In particular we examine the context of the alliance as a shared space and a collaborative membrane which becomes an enabler for shared action based on democratic principles.

As part of this process, we explore the tensions inherent in the move from a traditional contracting relationship, where the public agency holds power and control over private sector contractors through defined specifications, to the alliance environment where power is relinquished in favour of democratic problem-solving processes. At the heart of this tension is the need to abandon the view of knowledge as an asset that can be captured, stored and transferred to a view of knowledge as a tool to support

knowing in practice (Cook and Brown 1999). Knowledge is enacted everyday in people's practices and the capabilities which this action generates can be characterized by the term knowledgeability (Orlikowski 2002).

Based on this case study, we further assert that the nature of an organization's boundaries is more important than simply the location of these boundaries. In particular we discuss the permeability of boundaries and how this affects the engagement in, and democratization of, knowing and learning between partners.

PUBLIC-PRIVATE ALLIANCES AND ORGANIZATIONAL BOUNDARIES AS MEMBRANES

Before we explore the shift from knowledge to knowing in practice, we must first explore issues pertaining to structure, as our questions concerning knowledge are fundamentally shaped by the position and more particularly the nature of organisational boundaries. In essence, just as knowledge and knowing as practice is socially constructed, so too are institutions social constructions. To understand how hybrid public-private alliances have merged as enabling environments for knowing in action, it is important to understand the rationale for the establishment of these organizational forms.

From a transaction cost perspective, inter firm collaboration, both in its bilateral and network forms, has been viewed as an intermediate organizational form (Grant and Baden-Fuller 1995). Under certain circumstances these hybrid modes can be superior to either market transactions or internal governance (Williamson 1991b, Grant and Baden-Fuller 1995, 2004). Williamson (1991a, 269) sees hybrid forms as being a broad middle ground between the two extreme 'polar forms' or ideal types of markets and hierarchies.

While thinking in ideal types can be a powerful sorting schema, in reality the boundaries of the firm have always been problematic (Heracleous 2004). Boundaries were never as discrete as we theorised that they were, because organizational structure is contingent on and adaptive to economic and environmental variable such as complexity, uncertainty and technology (Pugh 1973, Child 1975, Quinn 1978, Granovetter 1985). Even early theorists, including Coase (1937) recognised that these distinctions were artificial. Thus the firm boundaries are not necessarily clearly drawn

(Weick 1979) and interlocked behaviours extend beyond firm boundaries to encompass its supply chain partners, allies and stakeholders in strategic networks (Gulati, Nohria, and Zaheer 2000). This reflects Haracleous' (2004) contention that boundaries should be conceptualized as relational processes, the formation, properties and consequences of which are the result of complex, shifting, socially constructed and negotiated entities. We acknowledge the contribution of organizational economics approaches to the study of organizational boundaries, but we are simultaneously cognizant that a less parsimonious - but richer - conceptualization is required to capture and tackle the dynamics and complexity of relationships in hybrid forms such as public-private alliances. A conceptualization of organizational boundaries that goes beyond the question of localization is required to encapsulate the activities and processes that unfold between organizations, in other words the permeability of the boundary.

Based on the idea that the value chain might be dispersed across different owners but that they are controlled in economic terms through the operation of core competencies, McGee (2003) develops the notion of the knowledge web which replaces the activity sets of the value chain with knowledge concepts. At the centre is what McGee (2003) refers to as the corporate glue. The corporate glue equates to corporate paradigm or culture (Fiol 1991; Weick, 1995), which has a profound bearing on how organizations perceive and engage with the environment (Daft and Weick 1984, Weick 1988) – internally and externally.

INSERT FIGURE ABOUT HERE

The knowledge web leads to a visual representation of the organization (Figure 1) which acknowledges the existence of external as well as internal organizational boundaries. Managing activities and processes across organizational boundaries highlights the roles of values and knowledge embedded in organizational culture: the successful performance of activity across boundaries requires cultural compatibility and mutual understanding. In particular, the management of knowledge processes between alliance partners hinges on successful boundary management. In the next section we develop a membrane metaphor of organizational boundaries which underpins our conceptualization of inter-organizational knowing processes.

The membrane metaphor

The blurring of the boundaries between markets and hierarchies indicates that boundaries are more permeable than suggested by the economics of organization (Foss 2002). Hamel (1991) proffers the useful analogy of a “collaborative membrane” to describe the permeability of this boundary. At the heart of this permeability is the fluid nature of knowledge and knowing, rather than issues of structure – legal, governance or task (Hamel 1991). Conceiving of an alliance as a collaborative membrane suggests that access to people, facilities, documents and other forms of knowledge is traded or shared between partners in an ongoing process of collaborative exchange (Hamel 1991).

Membranes and permeability are important sense-making metaphors in this study which help us understand the way that organizational boundaries are configured relative to operational boundaries, the necessary subsequent transfer of knowledge and the location of knowing activities. We construct the membrane and permeability metaphors referring to biology (the source domain) as well as management (target domain) (Gentner 1983, Cornelissen 2005). To begin with, to explain how knowledge is transferred between (and within) organizations, we build on the ‘collaborative membrane’ metaphor used by Hamel (1991) to describe how skills and competencies flow between partners. The degree to which this membrane is permeable, and the directions in which it is permeable, determines relative learning (Hamel 1991). This membrane analogy suggests an ongoing process of collaboration exchange. This is significant because the nature of the organizational boundary in terms of permeability matters as much – if not more – as compared to where it is drawn. Jacobides and Billinger (2006) introduce the notion of permeable organizational boundaries to explain how markets and hierarchies can be used simultaneously for the same activity as permeability allows for inputs and outputs, and most importantly knowledge, to move relatively freely into and out of the organization. We further develop the membrane metaphor by exploring related biological constructs such as permeability.

The membrane metaphor is particularly pertinent to transfer of knowledge between organisations when the five related yet distinct roles of biological membranes are considered (Becker, Kleinsmith, and Hardin 2003). While membranes define the boundaries and serve as permeability barriers of the cell, they also serve as loci of

specific functions and control the movement of substances in and out of the cell. However, most importantly, membranes contain the receptors required for the detection of external signals and provide the mechanisms for cell-to-cell communication.

This framework allows us to make the ‘semantic leap’ (Cornelissen 2005) by articulating knowledge boundaries and processes through incorporating the other associated concepts from biology of: permeability, absorption, diffusion and solubility.

In biology, permeability refers to the rate at which a penetrant – liquid or gas – diffuses through a boundary (Massey 2003). Permeability is dependent on solubility, which refers to the penetrant and the structural characteristics of the barrier. There are few substances (only gases such as oxygen, nitrogen and carbon dioxide), which enjoy the ability of free or simple diffusion, i.e. the ability to move spontaneously across a barrier (Bolsover et al. 2004). In other cases the rate of passage of substances through a membrane are determined by temperature, concentration and pressure. Just as these factors are required to push molecules through a membrane, so the rate of knowledge flow between organizations is determined by factors such as criticality, and the key determinants identified by Hamel (1991) - strategic intent, transparency and receptivity or absorptive capacity.

It is not enough to create knowledge, there must be intent to use and share it: it must be translated into action before it is of worth (Macklup 1980, Dixon 2000, Inkpen 2005). As in biology, where few substances can freely diffuse, organizations do not spontaneously create knowledge out of experience – it takes intention for this to happen (Dixon 2000). The factors that determine transparency in a relationship between two partners include the degree to which one partner can penetrate the social context which surrounds the other partner and the organizations attitude towards outsiders (Hamel 1991). Critical to transparency and closeness between partners in knowledge transfer are relationships (Inkpen 2005) based on trust and value congruency, whether at an individual and organizational level (Aadne, von Krogh, and Roos 1996).

In knowledge transfer terms the solubility analogy reflects how the complexity of the knowledge, i.e. the degree of explicitness or codification versus tacitness or embeddedness impacts its ability to move between organizations. While highly explicit knowledge may move freely across boundaries, tacit knowledge takes considerable time and effort to transfer, if it is able to be transferred at all.

Extra-organizational, as well as intra-organizational, boundaries can be conceptualised as semi- or selectively permeable membranes in the way that biological membranes only allow through selected substances. For example, the GORE-TEX® membrane contains over 9 billion microscopic pores per square inch. These pores are 20,000 times smaller than a water droplet, but 700 times larger than a water vapour molecule, which makes the GORE-TEX® membrane completely waterproof from the outside, while allowing perspiration to escape from the inside (W. L. Gore and Associates 2007).

The GORE-TEX® example works as a useful metaphor for inter-organizational knowledge transfer in that it highlights that it is easier for small amounts of simple or explicit knowledge to cross inter-organizational boundaries than it is for large quantities and/or more complex knowledge such as processes which combine tacit and explicit knowledge. Organizations and their need to absorb new knowledge may be likened to cells which depend on balancing water uptake and loss and can burst if they take on too much water and collapse if they lose too much (Bell 2007). The GORE-TEX® example also suggests how knowledge can be asymmetrically transferred. For example if one organization values tacit knowledge and the partner in knowledge transfer values explicit knowledge and the membrane is designed to only allow for the flow of explicit knowledge then the knowledge flow will be asymmetrical. This raises the issue of compatibility when forming strategic alliances, as evidenced in the early years of General Motors' NUMMI alliance with Toyota. While NUMMI was outperforming comparable GM plants, early attempts to transfer knowledge from NUMMI to GM were unsuccessful because GM advisors did not have the capacity to absorb the knowledge (Inkpen 2005).

FROM A STRATEGIC VIEW OF KNOWLEDGE TO A THEORY OF KNOWING

The boundaries of the firm question we have addressed is largely influenced by strategic management scholars. In the same way, research tying knowledge management issues within and particularly across organizational boundaries has drawn upon the strategic management conceptualization of knowledge. While, these take a number of forms, four perspectives tend to dominate the literature (McGee, Thomas, and Wilson 2005). Firstly the resource-based view of knowledge (Wernerfelt 1984, Winter 1987, Prahalad and Hamel 1990, Grant 1991, Hamel 1991, Grant 1996) sees knowledge as an asset for gaining competitive advantage. The subsequent knowledge based theory of the firm (Grant 1996, Spender 1996) shifts the focus from value appropriation to value creation (Berger and Luckmann 1966, Ghoshal and Moran 1996). Secondly the Schumpeterian (1934) view reflects knowledge as innovation, i.e. the creation of new knowledge (Hargaddon and Sutton 1997). Thirdly, the evolutionary economics view (Nelson and Winter 1982) focuses on knowledge as being embedded in routines and emphasizes its tacitness (Nightingale 2003). Fourthly the dynamic capabilities view suggests that knowledge is achieved through learning (Teece, Pisano, and Shuen 1997, Eisenhardt and Martin 2000). These perspectives are complementary and are all useful for analyzing the determinants of knowledge transfer and the resultant learning in strategic alliances because they encompass a range of conceptualizations of knowledge and knowledge management, from managing knowledge as an asset to organizational knowing (Cook and Brown 1999, Orlikowski 2002). These conceptualizations of knowledge reflect the well-known division of strategic management schools between approaches predicated on content and design, and approaches highlighting intent and process (Mintzberg, 1990). Thus the first two strategic perspectives are founded on an "epistemology of possession", i.e. they treat knowledge as something that people or organizations possess (Cook and Brown 1999, Snowden 2002), whilst the third and fourth approaches rely on an epistemology of practice (Cook and Brown, 1999; Jarzabkowski, 2004) and view knowledge as associated to processes of knowing in action (Nicolini, Gherardi, and Yanow 2003).

From a practice perspective, knowing is conceptualized as an "enacted capability" (Orlikowski, 2002: 269-70) continuously constructed and re-constructed through ongoing and situated practices. In this view, organizational competencies and capabilities are not fixed or given enduring properties: they are dependent on the

activities of organizational members (Giddens, 1994; Lawrence and Suddaby, 2006). In other words, resources and capabilities - like organizations - are dissipative structures requiring ongoing maintenance and re-building (Weick, 1979). The practice perspective thus implies that the enduring properties of competences and (dynamic) capabilities assumed by strategic perspectives on knowledge are theoretical artifacts, consequences of the equilibrium thinking of the resource based view and knowledge based theory of the firm (Bromiley and Papenhausen 2003). In relation to managing knowledge across organizational boundaries in alliances, the practice perspective indicates that it may not be very productive to seek to increase a stock of knowledge as implied by the epistemology of ownership. Rather, the development and maintenance in the alliance environment of a capability to use knowledge as a tool of knowing (Cook and Brown, 1999) and the development of "knowledgeable" (Orlikowski, 2002) actors and organizations may be a more appropriate aim.

Building on all of these approaches to knowledge and knowing, Tywoniak (2007a) has built a holistic, pluri-epistemic, conceptualization of an organization's knowledge management practices according to three complementary levels. At the first level knowledge is seen as a thing or asset, the capacity to apply a heuristic; at the second level knowledge is conceived as a knowing process, the development of new heuristics; whilst at the third level knowledge is conceived as part of a system of knowing in action, capable of generating new processes of knowing¹. Tywoniak (2007a) thus suggest that knowledge is at once a structure, process and a complex system. As a structure it is validated through action; as a process it is contextualised in individual experience and as a system it is embedded in social and cultural experiences (Dixon 2000, Nicolini, Gherardi, and Yanow 2003). Such a systems thinking approach to knowledge can be extended to encompass concepts of information ecologies (Brown and Duguid 1998; Cohen 1998; Davenport and Prusak 1998) where knowledge is produced through dynamic, inter-related connections. In other words, the practice perspective ushers a conceptualization where knowledge is not an objective asset, but a subjectively constructed social process.

Given the shared context, i.e. knowledge is not stable or enduring (Orlikowski 2002, Nicolini, Gherardi, and Yanow 2003), knowledge and knowing are laden with

¹ In this sense, our three levels of knowledge management mirror the hierarchy of single-loop, double-loop, and triple-loop learning (Argyris and Schön 1978; Flood and Romm 1996).

ambiguity and actors deploy cognitive devices, i.e. reflection to help make sense of the work and negotiate meaning. Ongoing engagement in social practices and thus the ongoing reproduction of knowing generated through these practices is how knowledgeability can achieve continuity over time and space (Orlikowski 2002). However knowledge is not recurrent because every new context and set of practices creates new knowledge and ways of knowing. Thus knowing precedes knowledge, both logically and chronologically, because knowledge is formed or institutionalized through knowing (Nicolini, Gherardi, and Yanow 2003). This perspective negates the idea of competence or the expert, as knowing is an ongoing, evolutionary process of experimenting with and interpreting new situations and practices specific to these. Thus the production of new knowledge is an ongoing reflexive process (Spiegler 2003), i.e. an active process of continually engaging with data, information and knowledge to generate new knowledge through knowing in action.

A holistic view of knowledge enables to bring together the practice and ownership epistemologies: as Ryle reminds us, knowing "that" (theoretical, mind knowledge) and knowing "how" (practical, body knowledge) are distinct and complementary. Both are required to perfect practice (Chia, 2003) and the one is required to make sense of the other (Polanyi, 1967). Thus, a holistic conception of knowing as practice introduces a cycle where action is informed by reflection, and where learning occurs as action and reflection are integrated, and so on. But, although knowing in action relies on cyclical processes, it is not circular: knowing is "an ongoing social accomplishment, constituted and reconstituted as actors engage the world in practice" (Orlikowski 2002, 249).

In relation to these knowing cycles, project-based organizations -including construction industry organizations- face a particular challenge: cycles of knowing happen within projects, but the discontinuities of action and organization between projects create obstacles to the effective harnessing of learning from one project to the next (Manley and McFallan 2002). Knowledge processes and management in project-based organizations differs from that in functional organizations where new ideas are created in the function and the best of these are selected for reuse and stored within the function where they can be reused (Turner 2005). In the temporary project context, new ideas are generated but it is difficult to select and retain these new ideas – and if they are stored, they are not always immediately available to other projects

(Turner 2005). In essence, projects do not have organizational memory because of their temporary nature (Love, Fong, and Irani 2005). While the project environment is flexible, responsive and innovative, the challenge for project-based organisations is finding mechanisms to transfer the knowledge generated in one project to new projects (Pinto 2005, Maqsood, Finegan, and Walker 2006).

Our field research set out to study how to enable learning and knowledge management across projects and organizations in the context of the Australian construction industry. In the following sections, the research methodology is described, and then our case study findings are discussed.

METHODOLOGY

In this section we discuss the three interconnected, generic activities which define the qualitative research process used in this study – theory, method and analysis (Denzin and Lincoln 1998).

In order to build case studies from research data, a qualitative approach was used, as it allowed us insight into the shared organizational knowledge and every day actions and interactions of staff in the organizations being studied (Miller, Dingwall, and Murphy 2004). Furthermore, qualitative research is flexible enough to deal with unanticipated factors which emerge and to provide organizations with information that they would not have anticipated was relevant (Miller, Dingwall, and Murphy 2004).

The qualitative philosophical and paradigmatic perspective acknowledges that reality is subjective and multiple, and created by the participants in the study – the researcher, the individuals being investigated and those reading or interpreting the study (Creswell 1998, Denzin and Lincoln 1998, Whiteley 2000). In other words, this choice reflects a worldview which accepts that reality is socially-constructed and that objective reality can never be captured (Denzin and Lincoln 1998).

By making these methodological choices the researchers aimed to minimise the “distance” or “objective separateness” between themselves and those being researched (Guba and Lincoln 1988, 94 cited in Bryman 1988, Creswell 1998). Smith (1999 cited in Charmaz 2000) suggests that the knower does not stand outside and apart from social reality, but rather is an active participant in the social that they discover.

The research design connected the qualitative interpretive framework to strategies for inquiry and methods for collecting data (Denzin and Lincoln 1998, 2000, Morgan 2007), which would satisfy the paradigmatic imperatives of the proposed study. The ontological and epistemological choices of this study dictated specific methodological practices, such as exploratory, qualitative interviews.

Given the practical application that the outcomes of this research will have in the day to day lives of people working in government agencies a pragmatic approach is justified (Seale et al. 2004). This required exploring the tensions between philosophical imperatives and the 'reality' of day to day practical experience for people in organizations. This pragmatic, constructivist research process had a two fold purpose. It not only supported the development of the research topic, but the constant building and honing of research knowledge and skills by constantly returning to the literature to resolve issues or complement learning. This approach is true to the pragmatic, strategic and self-reflexive nature of qualitative research (Denzin and Lincoln 1998). This approach is less concerned with the systematic gathering of facts and describing acts. Rather it focuses on subjective meaning - the views, values, beliefs, feelings, assumptions and ideologies of the individuals (Creswell 2002).

Primary sources of data were ten extensive face to face interviews with key internal and external stakeholders. Further, supplementary data came from four telephone interviews with internal and external stakeholders in response to emergent data. Secondary data sources included websites, annual reports, strategic documentation and procedures and were used as background information and as support for mapping processes and relationships. We analysed the paths of the knowledge and operational boundaries as well as the dynamics of relationships with outsourcing partners.

Purposive sampling of participants to yield rich data was useful in developing the case studies. We immediately started analyzing data and based decisions about what data to collect next on this analysis, thus providing valuable clues about missing data and shaping theoretical sampling (Miller, Dingwall, and Murphy 2004). As interviewers we chose what questions to ask and what lines of inquiry to pursue, thus we constructed the interviews to get the data we require. In so doing, we shut down certain lines of inquiry and legitimized others. Rapley (2004) sees the interview as

being an integral part of analysis, a “knowledge producing” activity which is ongoing throughout the research project. Qualitative data from interviews was coded, using open coding (Creswell 2002), then analysed and managed using NVivo™. NVivo™ was chosen as the preferred analysis software because of its ability to assist in the maintenance of large data sets (Parry 1998), as well as contributing to the maintenance of precision and rigour in qualitative data analysis (Richards and Richards 1992 cited in Dasborough 2006).

The process of categorisation in constructivist grounded theory is dialectical and active (Charmaz 1990). The interaction between the researcher and the data is a discovery process, informed by the researchers’ extant knowledge (Charmaz 1990, Whiteley 2000). To reflect the active nature of this process, Charmaz (1990) uses active coding labels such as defining and preserving which reflect active processes. We coded for processes, actions, assumptions and consequences rather than for topics which generated greater analytical precision (Charmaz 1990). In particular we coded for processes which assisted in defining activities and issues and helps us make connections between structures and events (Charmaz 1990).

Constant comparison and constant questioning of data, categories and concepts were central to the efficacy of raising categories or terms to concepts (Charmaz 1990). The process of raising categories or terms to concepts was an active decision making process shaped by the ideas the researchers has about the data, in relation to the literature, once they has interacted with it (Charmaz 1990, Rapley 2004).

In the analysis process we regarded the theory and the emergent data as having equal status, with the theory becoming just another point of reference in a constant comparative process to highlight areas where data was still required. This pragmatic approach suggests that no qualitative research uses pure induction (Charmaz 2005). Perhaps a better term is abduction, which is the moving back and forth between induction and deduction by converting observations into theories and then assessing those theories through action (Dey 2004, Morgan 2007). Thus abduction is interpreting a phenomenon within a specific theoretical frame of reference (Dey 2004). However, unlike deduction where the result is a logical conclusion, abduction delivers a plausible interpretation (Dey 2004). The mode of reasoning is characterized by a process of reconceptualization where we describe, interpret and

explain a phenomenon within a new framework (Dey 2004). This fits with the constant comparative method of the constructivist grounded theory approach, which recognises that the researcher comes to the research with prior knowledge and shares in the construction of the knowledge.

The initial lens used as the theoretical underpinning (Yin 1994) of this case study was Hamel's (1991) seminal work which outlined the determinants for knowledge transfer and learning between alliance partners. While this lens could account for the factors which might impact the flow of knowledge between the partners, it could not account for the shared knowing and learning which emerged from the co-location of actors from a range of disciplines and organizations in the alliance space. Central to this shared learning was the trust that developed as the team developed and relationships grew, but also the excitement when actors realized the potential to learn and create new knowledge which was generated in the alliance team. The learning which occurred through shared practice not only focused on innovative road building solutions but also on the business of creating successful alliances.

Given the use of various theoretical lenses, the case study is simultaneously a process of enquiry and a product of that enquiry (Stake 2005). The very nature of this process underpins the idea of knowing in practice and the creation of explicit and tacit knowledge as an outcome of this process. The individual case study is a specific, unique, bounded system which concentrates on experiential knowledge and pays close attention to the influence of its social, political and other contexts (Stake 2005). This methodology is invaluable for reflecting on the complexity of organizations because it allows us to explore the interplay of resources and competences within firms, and sheds light on the influence of corporate ideologies, beliefs, routines and how and when the firm sub-units are loosely- or tightly-coupled (Weick 1995). While the boundedness is a counterbalance to complexity on a large scale, the uniqueness is a challenge to generalisability (Stake 2005).

The case provides the rich data (Siggelkow 2007, Weick 2007) required to understand the second order complexity of knowledge processes which are contextualised in social and cultural experiences (Tywoniak 2007a). Knowledge of second-order complexity is not validated through direct successful experience but rather through social processes of intersubjectivity (Passeron 1996). Thus the use of unstructured,

qualitative interviews, which are seen to achieve Habermas' (1984) 'ideal speech situation', is a sound methodological choice for eliciting data for case study development. This was supplemented with secondary data sources. For Habermas (1984) this social "communicative action" is an act of communicative rationality, where two subjects engage in an intersubjective relationship to achieve shared understanding. The choice of a single, rich case study gives us interesting insights into the experiences of those in an organization which has only recently started using strategic alliances as a means of achieving its objectives. While the methodological intention is to capture the richness of the single case study, Yin (1994) suggests that the description and analysis of a single case study has the ability to convey information about a more general phenomenon by calling attention to issues and by highlighting discrepancies between theory and practice.

CASE STUDY SETTING

Established in 1926, Main Roads Western Australia (henceforth Main Roads) is Western Australia's statutory road authority. It is the longest serving public sector organization in the State and is responsible for highways and main roads with a replacement value of \$21.4 billion (about 30 percent of the State's total assets) (Main Roads Western Australia 2006). The organization's net assets are worth \$22.5 billion and its responsibility extends to total asset management of the classified road network, project delivery associated with network expansion and maintenance and traffic and road user management (Main Roads Western Australia 2006). Operations cover 2.5 million square kilometres, with dramatic diversity of climate and road conditions, making Main Roads one of the largest geographically spread road agencies in the world. Western Australia has 174,008 kilometres of roads, of which declared Highways and Main Roads comprise 17,706 kilometres or about 10 percent. Main Roads also contributes funding to assist in the maintenance of 125,968 kilometres of local roads and 30,334 kilometres of roads through national parks and forests.

History of alliancing

Up until 1980s Main Roads had total control over the design and construction of roads. Even though as much as 60 percent of this work was handled by contractors, the organization continued to employ a huge internal day labour work force and

employees felt that the organization had a very strong sense of control over its own destiny. In 1996, Main Roads began a metamorphosis from maker and maintainer of roads to owner and manager, which would have major significance for the organization (Edmonds 1997). Change was driven by the State Government economic rationalist reform agenda and led to a rapid refocusing of Main Roads staff on outsourcing work to the private sector resulting in severe staff reductions (Edmonds 2007 in press).

A 2001 report commissioned by the Minister into the effects on Main Roads of contracting out virtually all services, including design, found that the 'full on' contracting out approach had severely impacted Main Roads knowledge base (Edmonds 2007 in press). The report recommended that within three years, Main Roads rebuild about 25 percent of its in-house design capacity, so that it was not just an 'informed buyer', but a partner in the State road industry.

Another critical step in becoming a partner in the road industry was the move towards relationship contracting and particularly alliancing. In December 2002 a new Commissioner took the helm at Main Roads and he brought with him a wealth of contracting experience and knowledge from another government agency, including relationship contracting (Edmonds 2007 in press). The organization also placed relationships on the strategic agenda by making 'building better relationships with key stakeholders by working together on aligning goals' a focus of its strategic plan: 2003-2007 (Main Roads Western Australia 2003b). Key expected benefits of this approach were minimising conflict inherent in adversarial style contracts, encouraging cooperation and reconnecting Main Roads staff directly with work to build capacity (Main Roads Western Australia 2003a, 2005, Edmonds 2007 in press). Those involved in alliances say that the biggest advantage has been that they do away with the focus on dollar value, thus negating the conflict which is inherent in traditional contractual 'relationships'. In alliances the focus is on problem-solving, innovation and flexibility. In November 2003, Main Roads entered into its first public-private alliance to build Stage 7 of the Roe Highway (Edmonds 2007 in press). This initial alliance contract was still fairly prescriptive, but was a significant step in an evolutionary process toward relinquishing control to an alliance entity. Four years later alliances operate as autonomous decision making bodies. In essence, resources and knowledge from multiple organizations are combined to create a new

organizational entity or “child” which is distinct from the parents (Inkpen and Currall 2004).

THE REPERTOIRE OF PRACTICES, ACTIVITIES AND KNOWING WITH THE ALLIANCE SPACE

Building on the repertoire of practices outlined by Orlikowski (2002), namely shared identity; interacting face to face; aligning effort; learning by doing and supporting participation; we review the activities and subsequent knowing which is generated within the alliance space. Underpinning this repertoire, particularly the practices of interacting face to face and aligning effort, is the conceptualization of the alliance as simultaneously a common space and a “collaborative membrane”.

Shared identity

Orlikowski (2002) asserts that the practice of shared identity constitutes “knowing the organization in practice”. Wenger (2003) also emphasizes the importance of construction an image of ourselves and our communities as a way of orienting ourselves in order to explore possibilities. In the case study, alliance space activities which comprise this practice began with a focus on team building. An independent alliance facilitator facilitated much of the team development process and the establishment of common values. According to a Main Roads alliance member: “Team development [of the management group] happened during the design phase and it was essential for future success. Because of the different cultures it was a battle from day one to build a team and we had to constantly work on our team culture and development. We tried to get people out of their huddles and focused on creating a new team with a unique identity.” The challenge of culture difference was equally salient to alliance partners, as illustrated by this quote from an industry partner: “No one way is right or wrong, but different organizations have a different culture, behaviours, work ethics and time management and we had to work from identifying individual goals to formulating common goals.” The realization that cultural distances separated organizations operating in the same industry and geographical area recalls Badaracco’s (1991b) finding that complex cultural differences distinguish neighbouring firms.

Alliance partners agreed that the biggest challenge in establishing an alliance partnership was bringing people from different organizations together to think as one.

This required the identification of leadership positions and reporting relationships which relied on interfirm trust, challenge traditional control mechanisms and ultimately needed the emergence of the intra-alliance trust (Inkpen and Currall 2004).

Interacting face to face

Building on a platform of “knowing the organization”, which in this context means establishing a new, unique, autonomous child organization, alliance partners then set about “knowing the players in the game” by interacting face to face (Orlikowski 2002). For Wenger (2003) the way we choose to engage with each other profoundly shapes our experience.

The project director, a construction industry alliance member, says: “The sharing of knowledge is a two way street and no one is bleeding off anyone else. While I have enhanced my knowledge of design and geotechnical issues, I know that the Main Roads guys have a better understanding of contracting issues. Although there is a contract in place, things are very different from a conventional contracting situation in that we negotiate better outcomes and there is a different mindset.”

The knowledge sharing which takes place in the alliance can be likened to Lave and Wenger’s (1991) idea of communities of practice as a tool for the facilitation of knowledge sharing in a learning environment. Communities of practice exist where there is a will by members to share information and experience in a like-minded community characterised by high levels of reciprocity and trust (Brown and Duguid 1998, Hinton 2003). It appears that when knowledge rides on the back of practice, people are more willing to share knowledge (Lave and Wenger 1991, Wenger, McDermott, and Snyder 2002).

Once the alliance team and space is established, people feel that they operate in an environment where it is safe to speak openly. Thus, the alliance is simultaneously a common space, for alliance members to share knowledge, learn and problem solve, and a “collaborative membrane” (Hamel 1991) between the alliance members and their parent organizations. The social context of a common space is integral to organizational learning which is essentially a social and cognitive process (Weick and Roberts 1993). This safe environment where experimentation is encouraged becomes the quintessential learning environment (Garvin 1993), while the “collaborative

membrane” fulfils the function of allowing learning to be effectively disseminated from one part of the organization to others within it (Starbuck 1992).

Essentially the alliance space works to ensure transparency between actors. The factors that determine transparency in a relationship between two partners include the degree to which one partner can penetrate the social context which surrounds the other partner and the organizations attitude towards outsiders (Hamel 1991). It is in this social context characterised by organizational routines, processes, practices, and norms, rather than documents and repositories, that much of the most powerful, embedded, tacit knowledge resides (Davenport and Prusak 1998, Tywoniak 2007a). This tacit knowledge is highly personal, embedded in experience and laden with emotion, values and ideals which are difficult to formalise and share with others, particularly between organizations (Badaracco 1991a, 1991b, Nonaka 1991, Nonaka and Takeuchi 1995, Nonaka and Konno 1998). When acquiring knowledge from another organization, it is not just the technical knowledge which is required but also access to and understanding of stories, myths, language and culture of the other organization (Nonaka and Takeuchi 1995). This is a way to comprehend the embedded knowledge that characterise routine (Nelson and Winter 1982).

The nature of this alliance reflect Teece’s (1992, 19) definition of strategic alliances as ‘agreements characterized by the commitment of two or more firms to reach a common goal entailing the pooling of their resources and activities’. Kale, Singh and Perlmutter (2000) found that alliances based on mutual trust and interactions at individual level promoted successful learning and the flow of knowledge across organizational boundaries, while limiting opportunistic behaviour between partners. This sense of commitment to common goals, the equitable sharing of resources such as knowledge and the engagement in shared practice in a shared context, contrasts with Hamel’s view of alliances as a competition for resources.

Aligning effort

In this case study, the practice of aligning effort equates to knowing how to coordinate across complex projects and multiple organizations. Alliance contracts are awarded based on the integrity and reputation of the alliance partners rather than on the basis of cost, with the cost of the project not determined until after the contract had been

signed and preliminary design work is completed (approximately six months into the contract). The key driver for Main Roads is to build the best possible roads for the community and so they seek alliance partners who can bring innovation to each project (Edmonds 2007 in press). While alliances with private consultants and contractors across a range of services are primarily risk/reward-sharing arrangements, they afford the opportunity for both public and private partners to engage in projects larger than any one entity would be able to undertake on their own. Other than the sheer scope of these projects, this scenario suggests that no one partner in the alliance has all knowledge to solve the complex problems to complete the project in their own right. Furthermore, while established standards and specifications for road building guide design and construction in the alliance, where these do not meet requirements, collaborative problem solving is employed to find the best solution.

This is a departure from the past where these same building contractors would have been contracted by Main Roads to construct a road according to clear design specifications provided in the contract. Furthermore, issues such as land acquisition, native title and heritage and all planning approvals would have been conducted by the public entity ahead of the issue of tender documentation. In this context knowledge about planning and design rested with Main Roads, while the “as built” knowledge was generated by the contractor. Thus the alliance context provides a capacity building potential for all individuals and organizations involved that is not inherent in conventional contracting arrangements.

Employees, in the parent company, involved with developing and implementing design standards see great benefits flowing back to their team. Involvement in large projects helps to build internal capacity because designers are involved in large complex projects, but they also benefit from the alliance office environment which breaks down silos between disciplines and allows for the close proximity of key players like the designer, constructor and the environmentalist. In this environment the constructor can work with the designer as the design unfolds. This scenario equates to Nonaka and Takeuchi’s (1995) socialisation process or the explorer/L-shaped learning landscape proposed by Prencipe and Tell (2001) where learning is socially driven and the emphasis is on creating and sharing implicit and experience-based knowledge through joint participation in work activities (Prencipe et al. 2005). Nonaka (1994) see this socialization process as vital to building trust between

partners. Thus, this close, social multidisciplinary experience enhances the design capacity of the alliance member, but also equips them to review and update standards more effectively. Furthermore, those returning from alliances bring with them enhanced design software skills, which they are able to share with others in their team. However, this process is often frustrated by the fact that within the organization, designers are using earlier versions of the design software and those returning from alliances often have the benefit of new knowledge and skills curtailed by this. This situation highlights the critical issues of receptivity.

Learning by doing

Learning by doing results in knowing how to develop capabilities (Orlikowski 2002). In our case study this translates to building knowledgeability, i.e. the capability of knowing in action, about how to build the best possible roads, as well as how to do alliances. As outlined above, actors from different organizations and different disciplines work in the same space, as opposed to in discrete locations as would be the case in a traditional contracting environment. Designers, constructors, geotechnicians and project managers work together on resolving issues and benefit from the understanding and knowledge that is built by physically participating in the work processes of other or allied disciplines. For example, rather than work in a purely conceptual framework the designer is located on site and is able to work with the constructor in the road building environment to understand the physical challenges. Working in this way breaks down the barriers between disciplines and enhances skills and knowledge in an environment where it is safe to experiment and problem solve.

Supporting participation

Orlikowski (2002) suggests that the practice of supporting participation develops the capacity of knowing how to innovate.

Main Roads specifically chooses alliance partners who have the capacity to innovate. Within the alliance space, this stance is supported by explicit strategies to share knowledge and learn from each other. At the start of each project, the independent alliance facilitator works with the newly combined alliance management team to determine goals, including a commitment that everyone in the alliance will enhance

their knowledge and skills. Part of this process involves establishing explicit non-cost key performance indicators, which are measured and rewarded by the client as part of the contract. These include training (including individual training plans), indigenous employment, occupational health and safety, stakeholder relationships and environmental issues. Thus there is a clearly articulated learning agenda aimed at building knowledgeability.

The alliance space as collaborative membrane

In the case study, the creation of the hybrid public-private strategic alliance is driven firstly by the need for vertical integration rather than knowledge acquisition. Other factors driving the macro bargain are innovation, achieving the best outcome for the community and building construction industry capacity, including within government agencies, i.e. building social capital. Broadly speaking, social capital is the benefits that the stakeholders derive from their social relationships (Bourdieu 1986, Coleman 1988, 1990) and these can accrue to individuals, organizations and industries or communities (Walter, Lechner, and Kellermanns 2007).

In an environment where it is government policy to de-integrate, the competition for knowledge between alliance partners does not exist as Hamel describes it. Rather than an alliance between competitors we see an alliance between an elite public organization and several specialised private suppliers. Here the elite public organization equates to Quinn's (1992) idea of the 'central firm' which collects together partners to contribute to the whole system and whose roles are clearly defined in a positive and creative way. Kooiman (1993) suggests that the boundaries between state and society have shifted and also become more permeable and as this has occurred the borderline between public and private responsibility have become an object of interaction. This interaction recognises the interdependencies in an environment where no single actor – public or private – has all the knowledge (and we would suggest other resources) to resolve complex, dynamic and diversified problems (Kooiman 1993, Innes and Booher 2003b cited in Michaels, Goucher, and McCarthy 2006). Thus the context and intent of the partnership in this case is very different to that described by Hamel, where the alliance provide a pre-determined territory, i.e. getting the best road possible for the community and developing industry capacity in the state, as well as common space in which to collaborate to achieve this.

The cocreation of common ground (Bechky 2003) in the alliance environment is supported by the physical collocation of actors (Carlile 2004). The collaborative nature of this public-private alliance with its strong orientation towards team building, shared learning and relationships, as opposed to competing with partners for knowledge, results in the dual nature of the alliance as both a collaborative membrane and a common space. This intersubjective space is where the easy transfer of explicit knowledge occurs and as relationships develop the efficacy of the transfer of tacit knowledge increases. Here knowledge can be seen as neither the representation of reality nor the result of an application of ultimate rational criteria, but instead a competence to engage successfully in practice (Habermas 2003), which is at the heart of the creation of tacit knowledge or ‘know how’ (Ryle 1949, Polanyi 1967, Nonaka and Takeuchi 1995). The intersubjective social context and the processes they embody represent knowledge of second-order complexity as explicit and tacit knowledge are combined to create common knowledge which is able to pass from one community to another (Tywoniak 2007a).

This intersubjective or common space can be compared with Nonaka’s concept of “ba” (Nonaka 1994, Nonaka and Takeuchi 1995, Nonaka and Konno 1998, von Krogh, Ichijo, and Nonaka 2000, Nonaka, Toyama, and Konno 2001), which is a shared space for knowledge creation and transfer. This differs from the concept of “environment” in that it is both physical, virtual and mental and individuals operating in “ba” are indivisible from it (Cohen 1998, Nonaka and Konno 1998).

From a western perspective, Nonaka’s “ba”, like his previous conceptualisation of “common cognitive ground” (Nonaka 1991), can be likened to Habermas’ (1984) intersubjective social context. In western organizational terms this could be seen as the enmeshing of the physical work environment and the organizational culture. In this context there is less emphasis on knowledge transactions and greater emphasis on personal connections and commitment to shared outcomes (Cohen 1998). Tacit to tacit knowledge is shared between individuals in processes characterised by “indwelling”, i.e. looking with others at what they do rather than looking at what others are doing (Polanyi 1967, Cohen 1998, von Krogh, Ichijo, and Nonaka 2000).

The democratization of knowledge processes

The case study suggests that the parent organization devolves responsibility and authority to its members within the alliance. Within the parent (and here we speak only of the public sector parent) processes and practices are still largely dominated by a hierarchy. Juxtaposed with this situation, within the alliance democratic processes and practices evolve as a result of mutual trust, relationships and the perceived benefits of engaging in shared practice.

However, we should not view this transition from traditional contracting to alliances contracting as unproblematic. Inherent in the traditional contracting arrangements was control by the public agency over private sector contractors. We need to highlight the tensions, i.e. the emotional nature of the transition and acknowledge the power relationships inherent in former practices. Moving into this new paradigm does not automatically guarantee a move to collaboration and cooperation and would not be without fear. This is not just a question of changing the relationship dynamic with contractors from a hierarchical power and control based relationship, which leverages off the strict terms and specifications of a contract, to an alliance relationship based on democratic principles and trust. In alliances, control issues are often at the heart of conflict between partners (Inkpen and Currall 2004). This issue stem largely from the fact that there is more than one parent and traditional hierarchies are challenged by the need to relinquish control to the new, “child” entity (Inkpen and Currall 2004).

In the alliance partnership, the trust between partners is based on social judgements of the other party’s benevolence, competence and an assessment of the risk and cost if the other party proves to be untrustworthy (Inkpen and Currall 2004). Under these conditions, a party’s trust is signified by their decision to take action that puts its fate in the hands of its partner. Thus trust becomes yet another active component contributing to knowing in practice.

We should therefore not assume that because democratic processes support knowing as practice and relational process that they are an evident choice. This is evidenced by the fact that initial alliances were still fairly tightly controlled but this control has lessened as the organisation has become more comfortable and seen the power of

alliances. The nature of the alliance space has required Main Roads alliance members to engage in democratic processes and as they perceive the benefits of these, e.g. knowledge transfer and learning, they have become more comfortable to use these practices.

One Main Roads alliance member admits that before going into an alliance he was skeptical when people spoke of the potential for knowledge transfer. “I didn’t think that the knowledge and skills transfer would work the way people told me it would, but I have learnt a huge amount about how contractors work and I have taught the contractors about how Main Roads works and there has been an enormous transfer of knowledge,” the respondent said. This attitude reflects some of the anxiety over asymmetric learning expressed by managers in Hamel’s (1991) study, as well as Weick’s (1979, 135) notion that ‘believing is seeing’, i.e. our mental models stand in the way of organizational learning.

Main Roads staff seconded to alliances indicate that the interface with Main Roads is fluid, but never intrusive. However, from the Main Roads perspective the alliance interface is made complex by the multiple roles which Main Roads plays in the alliance, namely alliance partner, client (head office), stakeholder (regional office) and advisor (Technical Advisory Group). Tension arises because those who are integrally part of the process appreciate the flexible and innovative practices employed inside the alliance, while those on the outside may work to maintain the status quo and reinforce standards. These tensions may raise potential issues for receptivity and absorptive capacity within Main Roads, despite the multiple conduits for knowledge transfer and learning into the organization.

Within the parent organization, there is an element of frustration with alliances because they are so resource hungry and they take away some of the best people for extended periods of time. With limited resources this is potentially leading to a loss of opportunity in other areas. However, this is balanced against the fact that knowledge is flowing back into the organization. This reflects classic tensions between the rigidity and complexity of traditional organizational structures and the flexibility of alliance project team highlighted by Nonaka and Takeuchi (1995). They ascertain that organizations need to develop new organizational structures in order to effectively and continuously create knowledge. The hypertext organization proposes interlacing

flexible task forces (project layer) with hierarchical formal structures (business layer) to allow for knowledge to move dynamically between the two structural layers to create the organizations knowledge base (Nonaka and Takeuchi 1995). The organizational structure and culture needs to be oriented towards allowing the best people to move between these structures for the duration of projects, in the best interests of building the knowledge base.

By engaging in alliances more and more people will experience and understand the inherent benefits of democratic processes for generating knowledgeability, because when alliance members return to the parent organization they take with them invaluable knowledge not only about the practice of constructing a particular road, but also about the collaborative, problem solving processes involved to achieve the outcome . The non-routinized actions and attempts to make sense of the unfamiliar inherent in problem solving are a critical source of radical learning (March, Sproull, and Tamuz 1991, Nonaka 1994, Miner and Mezias 1996, Adler, Goldoftas, and Levine 1999) and in this context knowledge is derived from making information actionable (Vail 1999). Main Roads alliance members indicate that they closely document the contracting award process, all other processes and lessons learnt at each critical milestone. Specific interventions throughout the project are also documented and all this detail is fed back into Main Roads. The internal experience embellishes knowledge which flows back to the organization through other conduits like formal reporting, designs and boundary spanning activities carried out by the Technical Advisory Group.

Main Roads people entering new alliances as team members have described the knowledge gleaned from the documented processes of previous alliance experiences as invaluable. Many Main Roads employees see the exchange of ideas, the flexibility to resolve differences of opinion and innovate in the open environment of the alliance as a very healthy way of building knowledge. This is particularly because effective feedback loops are being developed and this new knowledge challenges existing, traditional thinking within the parent organization. However, some employees are still skeptical about whether these feedback loops are effective fearing that much of the knowledge is still in people's heads and not captured in systems. They suggest the need for conversations which capture not only the lessons learnt, but also the stories that go to make up experience. Certainly the lessons learnt from each alliance are

supporting the development of future alliances. Skepticism at the efficacy of these measures must be seen in the context of poor feedback loops in traditional project environments within the organization. This is characteristic of the construction industry as a whole, where few organizations have systems in place to acquire, capture or convert their lessons learned into knowledge to support future projects (Love, Irani, and Edwards 2003). Central to this issue is the challenge to project-to-project learning because of the unique and temporary nature of projects (Prencipe and Tell 2001).

Implications for future practice

These findings have implications not only for management theory and theories, but for managers in organizations especially in the public sector. The greatest challenge for organizations is moving away from a view of knowledge management which conceptualizes knowledge as an asset to be created, acquired, transferred and stored. This requires a cultural shift in focus from an obsession with information and communication technology based repositories to a people oriented culture, where people are comfortable with and recognizes the power inherent in knowing as practice. For organizations this has implications for human resources practices as this requires the recruitment, selection and development of people who are comfortable with flexibility and ambiguity. The challenge as researchers supporting practice is to find ways of supporting practitioners in organizations to make this conceptual shift. Furthermore it requires an understanding that all forms of knowledge, i.e. explicit, tacit, individual and collective, are valid and required, but that without a recognition of knowing in practice, practitioners will not be equipped to deal the complex and emergent nature of knowledge.

From a structural perspective, the case study illustrates how the organization has rebuilt some of its capabilities via a reconceptualization of the structure of the boundaries of their organization such that they are more permeable and focused specifically on both parties to any alliance benefiting from the learning that is generated through democratic processes. What is clearly evident from this case study is that organizational structure, especially the location of boundaries (i.e. what was undertaken by each partner) and the nature of the organizational boundary (which was designed to be as permeable as possible) fundamentally affected the learning and

subsequent knowledge of Main Roads. Main Roads changed the boundaries of what they did such that their alliance partners worked with them on the preliminary stages (land resumption, heritage considerations etc.) and at the same time, employees were actively engaged in parts of both the design and the construct phases of the project. Strict delineation of organizational and professional discipline boundaries became far more difficult as parties to the alliance were involved in many stages. This in itself laid the foundations for knowledge transfer, but what also became central to the attempt by Main Roads to rebuild their capabilities was the design of organizational boundaries that were permeable and in fact the creation of explicit strategies and systems to enhance the movement of knowledge between alliance partners.

For government agencies involved in hybrid partnerships with private enterprises, this case demonstrates the need for senior management to consider where they position their operational boundaries (be they highly restricted through the use of outsourcing or far wider in scope) as these boundaries are critical determinants of a firm's knowledge stocks both now and into the future. Restricting the operational boundaries does not necessarily mean limiting a organization's knowledge and its subsequent capabilities. The purposeful creation of permeable boundaries is likely to be even more important than where the organization boundaries were originally set. In fact, coupled with cooperative contracts such as those found in alliance contracts as opposed to taking a more adversarial tack with contractors could allow a firm to develop its knowledge (and capabilities) to be a systems integrator (as per Brusoni, Prencipe, and Pavitt 2001) as opposed to a contracts manager. Finally, at its most fundamental level, this case clearly demonstrates that knowledge and knowing in practice cannot be disconnected from organizational structural issues as the two are inextricably linked.

In respect of the limitation of this case study, we suggest a cautionary note, for while our methodology does not seek generalizability, nevertheless, our case study explores a very specific context. The fact that Main Roads was tasked with rebuilding its internal capabilities meant that the organization sought to develop structure and systems that would allow for this to occur rather than focus exclusively on efficiency principles. This approach led to a level of top management support for a cooperative attitude, which may not otherwise have been apparent.

The intent of public-private alliance described is to leverage knowledge across organizational boundaries not to out-compete their alliance partner, but to get more out of their own fixed resources, e.g. caps on employee numbers. Furthermore, given that these alliances allow for private sector partners to engage in larger projects, previously outside of their scope, both partners might be seeking efficiency gains, but not competitive advantage. Furthermore, it is likely that knowledge embedded in the powerful relationships fostered by these public-private alliances may come to represent the most strategic capital outcomes of the risk/reward-sharing arrangements (Galbreath 2002).

The engagement in shared practice in public-private alliances, in the current public sector environment, requires a shift in thinking which recognises the need to share a culture that goes beyond the organizational boundaries (Rowlinson and Cheung 2002). It also requires a move away from the adversarial nature of contracting relationships which use dispute resolution mechanisms as a fall back position. The benefit in creating these partnerships is that they enable the organization to benefit from integration and specialisation in a manner that is most likely more difficult to replicate than if the knowledge was simply held internally. While a partner may be disadvantaged in the macro-bargain, i.e. through the form and structure of the contract, they may make gains in micro-bargains, i.e. through collaborative exchange and relationships because of their capacity to learn (Rowlinson and Cheung 2002).

These collaborative relationships are a central tenant of the knowledge based view of the firm, which offers advantages over the traditional transaction cost perspective in that it provides an understanding the drivers of collaboration (Grant 1996, Spender 1996). Certainly, the flow of knowledge, enabled by information and communication technology, is changing the way individuals and organizations interact and work, both within organizations and with those outside the boundaries of the organization such as suppliers, consultants and contractors (Dixon 2000, Galbreath 2002). In many instances new organizational forms have seen the boundaries of the firm radically transformed, not only by increasing moves to outsourcing and other forms of relational contracting and networks, but because of the implications of the fluid nature of knowledge capital versus the relatively static nature of physical capital (Foss 2002, Galbreath 2002, Foss 2007). Galbreath (2002, 9) speaks of 'extended enterprises' and suggests that knowledge in the form of intangible 'relationship assets' may come to

represent an organization's most strategic asset, ushering in what he terms the relationship age.

While the development of this case study within a theoretical framework of knowing in practice has implications of organizational process, strategies and structures, it also has valuable lessons for researchers. Essentially our research processes mimicked what we perceived to be happening in the alliance space, i.e. people building relationships and sharing what they know for the purpose of achieving shared understanding through shared practice. This view sees knowledge as “reciprocally constitutive”, i.e. we cannot have either knowledge or practice without the other (Orlikowski 2002, 250). For us as researchers, we learnt first hand that our prior knowledge did not necessarily always equip us for action. While prior knowledge may act as a support, knowing in action comes with practice, with knowledgeable performance having the knowing inherent in the action (Ryle 1949, Schön 1983 cited in Orlikowski 2002). Tsoukas and Vladimirou (2001, 973) claim “that knowledge is the individual capability to draw distinctions, within a domain of action, based on an appreciation of context or theory, or both”. Predicated on this they define organizational knowledge as “the capability members of an organization have developed to draw distinction in the process of carrying out their work, in particular concrete contexts, by enacting sets of generalizations whose application depends on historically evolved collective understandings (Tsoukas and Vladimirou 2001, 973)”. Organizational knowledge is essential, processual, dispersed and inherently indeterminate (Tsoukas 1996, Davenport and Prusak 1998, Cook and Brown 1999).

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Figure 1: Organizational Boundaries and their Relative Permeability to Knowledge Transfer

