



Munich Personal RePEc Archive

Knowledge Creation and Sharing in Organisational Contexts: A Motivation-Based Perspective

Alice Lam and Jean-Paul Lambermont-Ford

Royal Holloway College, University of London

July 2008

Online at <http://mpa.ub.uni-muenchen.de/11488/>

MPRA Paper No. 11488, posted 10. November 2008 00:09 UTC



School of Management, Royal Holloway University of London

Working Paper Series

SoMWP-0801

**Knowledge Creation and Sharing in Organisational Contexts:
A Motivation-based Perspective**

Alice Lam and Jean-Paul Lambermont-Ford

July 2008

The School of Management Working Paper Series is published to circulate the results of on-going research to a wider audience and to facilitate intellectual exchange and debate. The papers have been through a refereeing process and will subsequently be published in a revised form. Requests for permission to reproduce any article or part of the Working Paper should be sent to the publisher of this series.

The School of Management, Royal Holloway University of London has over 65 academic staff who are organised into different research groups. Currently research groups include:

Accounting, Finance and Economics

International Business: Asia Pacific and European

Marketing

Technology and Information Management

Organisation Studies and Human Resource Management

Public Services Management

Strategy

The School also has about 60 research students attached to the various research groups. A strong theme of research in the School is its international and comparative focus.

Copyright © Alice Lam and Jean-Paul Lambermont-Ford

ISBN: 978-1-905846-18-4

Published by:

The School of Management,
Royal Holloway University of London
Egham Hill
Egham
Surrey TW20 0EX

Knowledge Creation and Sharing in Organisational Contexts: A Motivation-based Perspective

Alice Lam, School of Management, Royal Holloway, University of London, Egham, Surrey.
TW20 0EX

Email: alice.lam@rhul.ac.uk

Jean-Paul Lambermont-Ford, Royal Holloway
University of London, Egham, Surrey. TW20 0EX

Email: j.lambermont-ford@rhul.ac.uk

Abstract

This paper develops a motivation-based perspective to explore how organisations resolve the social dilemma of knowledge sharing, and the ways in which different motivational mechanisms interact to foster knowledge sharing and creation in different organisational contexts. The core assumption is that the willingness of organisational members to engage in knowledge sharing can be viewed on a continuum from purely opportunistic behaviour regulated by extrinsic incentives to an apparently altruistic stance fostered by social norms and group identity. The analysis builds on a three-category taxonomy of motivation: adding ‘hedonic’ motivation to the traditional dichotomy of extrinsic and intrinsic motivation. Based on an analysis of empirical case studies in the literature, we argue that the interaction and mix of the three different motivators play a key role in regulating and translating potential into actual behaviour, and they underline the complex dynamics of knowledge sharing and creation in different organisational contexts.

Keywords

Knowledge sharing; tacit knowledge; motivation; incentives; organizational learning; human resource practices

KNOWLEDGE CREATION AND SHARING IN ORGANISATIONAL CONTEXTS: A MOTIVATION-BASED PERSPECTIVE

ALICE LAM* AND JEAN-PAUL LAMBERMONT-FORD
School of Management, Royal Holloway, University of London

INTRODUCTION

Knowledge sharing is a key process in translating individual learning into organizational capability (Frey and Oberholzer-Gee, 1997; Nahapiet and Ghoshal, 1998). But facilitating knowledge sharing is a difficult task: the willingness of individual to share and integrate their knowledge is one of the central barriers. Despite the voluminous literature on organisational learning and knowledge management, the nature of the relationship between individual motivation and knowledge sharing in organisations remains largely unexplored and poorly understood (Osterloh et al, 2002).

Existing theories of the firm have tended to place emphasis on the centrality of one particular motivational mechanism in governing the behaviours of firm members (Gottschalg and Zollo, 2006). Each of the theories on its own offers at best a partial explanation of why individuals do or don't share knowledge. The knowledge-based view, which has gained wide popularity in recent years, focuses on the social and collective dimension of organisational learning, viewing organisations as knowing entities and communities of practice that foster identity, commitment and learning (Brown and Duguid, 1998; Nonaka and Takeuchi, 1995; Spender, 1996; Tsoukas, 1996). It implicitly assumes a utopian view of 'benevolent co-operators' who voluntarily give up personal knowledge without appropriate reward. While it draws our attention to the importance of identity-based normative intrinsic motivation, it neglects potential conflicts of interest and incentive issues (Foss, 2003; Langlois and Foss, 1999). This 'positive' view stands in stark contrast with the 'negative' transaction cost view that assumes the worst self-interested opportunistic behaviour among firm members who seek to hoard knowledge unless sanctioned or induced to deviate from such behaviour (Williamson, 1987, 1996). The transaction cost perspective recognises that transforming conflict among self-interested actors into cooperation is a non-trivial problem. It recognises the problem of social dilemmas of knowledge sharing in organisations (Cabrera and Cabrera, 2002; Morris T, 2001) and assumes that these dilemmas can be resolved through monitoring and incentive alignment (Teece, 2003). The basic premise is that incentive-driven extrinsic motivation dominates other kinds of motivation.

In this paper, we argue that theories of organisational learning and knowledge creation will benefit from the insights of both these two perspectives, taking their differing behavioural assumptions and emphasis on the centrality of particular motivational

* Corresponding addresses:

Alice Lam, School of Management, Royal Holloway, University of London, Egham, Surrey TW20 OEX.

E-mail: alice.lam@rhul.ac.uk

Jean-Paul Lambermont-Ford, School of Management, Royal Holloway, University of London, Egham, Surrey TW20 OEX. E-mail: j.lambermont-ford@rhul.ac.uk

mechanisms as a starting point. We seek to develop a motivation-based perspective to explore the problematic relationship between individual employees' knowledge and the totality of the organisation. The paper builds on the large literature on employee motivation (Amabile, 1993; Deci, 1976; Deci and Ryan, 1985, 1987; Frey, 1992; Locke and Latham, 2004), and recent research on the management of motivation as distinctive firm competences (Gottschalg and Zollo, 2006; Osterloh, 2005; Osterloh and Frey, 2000). The aim is to understand how organisations resolve the social dilemmas of knowledge sharing, and the ways in which different motivational mechanisms interact to foster the transfer and creation of tacit and explicit knowledge.

By focussing on the motivational processes and the relationship between different types of motivators, we seek to bridge the traditional dichotomous view of treating knowledge sharing as either dominated by opportunistic or altruistic behaviour. We assume that both kinds of behaviour are plausible and potentially exist, and the willingness of organisational members to engage in knowledge sharing can be viewed on a continuum from purely opportunistic behaviour regulated by management authority to an apparently altruistic stance fostered by social norms and group identity (Christensen, 2005). We argue that motivational mechanisms play a key role in regulating and translating potential behaviour into actual behaviour, and they underline the complex dynamics of knowledge sharing and creation within different organisational contexts.

The analysis presented in the paper will draw on existing empirical studies to examine the relationship between motivation and knowledge sharing, and explore the different approaches used to resolve the social dilemma of knowledge sharing within different organisational contexts. In looking at social dilemmas and the ways in which organisations address them, we examine the relationship between HRM practices in use and the motivational disposition of employees to knowledge sharing. We believe that adopting a motivation-based perspective will add new insights into our understanding of the nature of the firm as a knowledge creating organisation. It could offer proposals for action in terms of organisational design and management practices that can better meet practitioner expectations than those derived from the narrow transaction-cost or knowledge-based perspectives.

MOTIVATION AND KNOWLEDGE SHARING

A Taxonomy of Motivation and Motivational Mechanisms

In examining motivation, Deci's (1976) original separation of motivation into *extrinsic* and *intrinsic* is taken as a basis. *Extrinsic motivation* allows individuals to satisfy their needs indirectly by obtaining additional resources (e.g. money, promotion and other non-financial resources). Markets systematically use extrinsic incentives (profits and rents) for motivational purposes. In an organisational context, extrinsic motivators may vary from piece-rate pay (Lazear, 1988) through pay for performance (Prendergast, 1999), partnership (Morris T and Pinnington, 1998) to career progression (Morris T and Empson, 1998). Extrinsic motivation supports the transfer of explicit knowledge but often fails in the case of tacit knowledge. This is because of the indeterminate nature of tacit knowledge and the difficulty of monitoring those who do not process tacit knowledge. The exclusive use of extrinsic motivation often places the individual in a

transactional rather than a relational stance in respect of the organisation, which may be suitable in certain organisational situations, such as the use of consultants or where there is a need to codify tacit knowledge to a limited extent (Hall and Sapsed, 2005: 73).

Intrinsic motivation gives immediate need satisfaction: an activity 'is valued for its own sake and appears to be self sustaining' (Deci, 1976: 105). Intrinsic motivation facilitates the generation and transfer of tacit knowledge under conditions in which extrinsic motivation fails (Osterloh and Frey, 2000). Within our analysis, we use Lindenberg's (2001) division of intrinsic motivation into normative and hedonic types which interact with each other and with extrinsic motivation, providing a more complete match between the individual and organisational environments.

Normative intrinsic motivation is directed towards the individual's sense of compliance with personal and social norms, expressed at an organisational level through the organisation's espoused values, and for the individual in terms of their identification with the social groups that they identify with (Kreps, 1997). The degree to which an individual acts or does not act when normatively motivated depends on the importance that they attach to compliance in a given context and also the external reaction to non-compliance. Lindenberg (2001) suggests that the achievement of a strong sense of community and solidarity through shared normative values is achieved by inhibiting action for personal gain, which may lead to intellectual sterility and a lessening of potentially innovative opportunity.

Hedonic intrinsic motivation is derived from engagement in self-determined, competence enhancing and enjoyable activity, achieved through physical and social wellbeing and improvement in the individual's condition (Lindenberg, 2001). In terms of knowledge sharing, this influences the willingness of an individual to share knowledge, depending on the importance that the individual attributes to being engaged in such activity in the context of the task and perceived task characteristics. Hedonic motivation has been shown to be an important factor stimulating creativity and innovation in that strong hedonic motivation induces knowledge seeking behaviour and increases cognitive effort (Amabile, 1997). This implies that a different focus may be necessary in looking at the tension between sharing knowledge in the contexts of knowledge exploitation and augmentation, with the latter possibly building on a higher hedonic element than the former.

Interaction Effects Among Different Motivators

The above three types of motivation are not necessarily additive and there may be complex interaction effects between them. The relationship between extrinsic incentives and intrinsic motivation is analysed in terms of 'crowding' effects by economists (Bénabou and Tirole, 2003; Frey and Jegen, 2001; Frey and Oberholzer-Gee, 1997). Social psychologists use the term 'motivational synergy' to conceptualise this interactive effect (Amabile, 1997; Hennessey and Amabile, 1998).

Extrinsic rewards may undermine intrinsic motivation for interesting tasks and encourage knowledge hoarding. Recent research has confirmed the existence of this 'crowding-out' (Frey and Jegen, 2001) or 'non-synergistic' effect (Amabile, 1997).

Within these, several key factors have been put forward to explain the possibility of ‘crowding-out’ effect, relating to the possibility of agents seeing their self-determination or self-esteem affected by incentives, (Amabile, 1997; Frey and Jegen, 2001), or a change in the level of involvement and enjoyment (Amabile, 1997; Seo et al, 2004) which may affect the overall level of motivation for a given goal. Self-determination may be reduced if the actual or perceived locus of control shifts outside the individual, lessening autonomy and reducing the scope of the individual to act in an altruistic manner (Frey and Oberholzer-Gee, 1997). Thus extrinsic motivators in terms of goal and task constraint or organisational structure may circumscribe the individual’s autonomy and lessen intrinsic motivation. Self-esteem may be lessened when the individual’s intrinsic motivation is not acknowledged, implying that their competence or effort are not appreciated. This may occur when incentives are given for specific performances or behaviours, quantifying effort and competence, thus changing the stance in regard to the task from an internally driven, relational one to a reward driven, transactional one. This indicates that incentives that quantify effort are rewarded by the effort that the individual deems necessary to obtain the reward. In an organisational setting, this can be seen where employees are rewarded for contributing to knowledge-bases and make only sufficient contribution to gain the payoff, or when sharing knowledge enables others to gain reward in place of the individual, overcoming normative or hedonic motivation to share knowledge (Kreps, 1997).

Conversely, the beneficial effect of extrinsic motivators on hedonic and normative motivation is termed “crowding-in” by Frey and Jegen (2001) and “synergistic” by Amabile (1997). These operate by being perceived as supportive by the individual and congruent with their underlying normative and hedonic motivational preferences. Extrinsic motivators that provide feedback, recognition and reward and which confirm or improve competences lead to increased self-esteem. Similarly extrinsic motivators such as career progression or increased involvement that aligns with the individual’s normative and hedonic motivators can have a synergistic effect. Furthermore, high personal commitment (normative) and enjoyment (hedonic) of the task at hand can be unaffected by extrinsic motivation (Amabile, 1997); in these instances, the activity itself provides sufficient motivation.

The combined effects of ‘crowding-out’ and ‘crowding-in’ on motivation is not reducible to a simple ‘yes’ or ‘no’ situation, but may be analysed as a continuum between the two regulated by specific combination or bundle of incentives and motivational mechanisms within different organisational contexts. Normative and hedonic motivation are seen to be essential in knowledge sharing and creative activities (Amabile, 1997; Huber, 2001), and the options for an organisation in terms of motivation are limited by its structure and nature of tasks performed. Whilst this has been examined at an organisational / individual level, there are different motivators at different levels, which may combine or conflict. Within the three types, normative motivation is seen as the most likely to be displaced by one of the other two types, and can only remain stable if both hedonic and extrinsic motivators are relatively weak and congruent (Lindenberg, 2001). This suggests that whilst the organisation can influence the extrinsic motivation within its purview, and indirectly influence normative motivation, it can only have limited influence [eg job design but see later] on a key element: hedonic motivation.

Where then, does motivation play a part in knowledge sharing? How do organisations leverage the different motivational mechanisms through HRM practices to foster knowledge sharing? What organisational forms are most conducive to the generation and transfer of tacit knowledge, and how do the different motivational mechanisms interact to shape learning and knowledge creation?

OVERCOMING THE ‘SOCAL DILEMMA’ OF KNOWLEDGE SHARING WITHIN ORGANISATIONS: HRM PRACTICES AND MOTVATION

Social Dilemmas of Knowledge Sharing: Why People Share or Hoard Knowledge?

Why do individuals share knowledge - an intangible private asset - in the context of an organisation, when their effort is neither directly measurable nor sanctionable? We look at this through the lens of Cabrera and Cabrera's (2002) work on knowledge sharing and social dilemmas. Shared knowledge becomes a public good from which interdependent members of an organisation can benefit directly whether or not they have contributed. This may lead to opportunistic behaviour and free-riding as there is a possibility to benefit without contributing – from an economic perspective, the individual gains without the cost. The cost to individuals may not only be in the effort and time spent in sharing knowledge but also, depending on the organisational context, by sharing knowledge they may diminish their own opportunities for advancement or enhance the advancement opportunities of others, thus losing in internal competition. A further attribute of the public good dilemma is that when non-contribution is not sanctioned and few individuals are perceived to contribute, the motivation to contribute diminishes and the value of contributing to the public good becomes questionable. This effect operates at different levels. First, the normative motivation to share knowledge is lessened as not sharing is seen to become an acceptable practice. Second, the extrinsic motivation to share, expressed via the (dis)incentive of sanctions, is not present thus reinforcing the change in normative motivation. Cabrera and Cabrera (2002: 693) suggest that most individuals are willing to bear the cost of contributing to a public good, and receiving its benefits as long as there “were an assurance that everybody else was going to pay his or her share”. This suggests that reinforcing normative motivators to share knowledge, providing suitable incentives for doing so and changing the perceived locus of ownership of knowledge as a public rather than private good may augment knowledge sharing propensity amongst individuals in an organisation. Implementing these changes at an organisational level involves changes in appraisal and reward systems, as well as inculcating values aligned with acceptable and encouraged practices and providing a setting wherein knowledge sharing can occur.

The social dilemma of knowledge sharing can be overcome in part by restructuring the payoff function (Cabrera and Cabrera, 2002: 695). From the inter-related effects of motivation, pure extrinsic motivation in financial terms will be of little use unless very high (Gneezy, 2003). However, relocating the focus of payoff from the individual to organisation and / or team should encourage cooperative action, as peer pressure will come into play: contributing enhances potential gain; not contributing decreases both personal potential gain and that of others. This does not preclude individual incentives recognising and rewarding knowledge sharing, but these may be more effective if they

enhance self-determination (autonomy through career progression) and self-esteem (competence enhancement through training) and should be congruent with the individual's motivational preferences, not only within but outside the organisation.

Normative motivation may be influenced by the organisation, reinforcing the individual's current motivational stance towards knowledge sharing. This is dependent not only on promoting an ethos of knowledge sharing through organisational values, but also acknowledging the contribution of the individual's normative attitude towards sharing, which may draw on their professional background (Lam, 2000) and embedded culture (Lam, 1997) which in turn raises possible issues of the legitimacy of norms between different epistemic and embedded cultures. Drawing on the large corpus of knowledge sharing literature, socialisation, common understanding and trust building play a significant part in sharing, which can also be related to normative congruence between individuals and between individuals and the organisation. We suggest that such practices should play a major role in the likelihood of sharing behaviour. But what means does an organisation have for enhancing hedonic motivation, a quintessentially personal aspect that cannot be dictated externally? This can potentially be answered by creating an environment which allows individuals to satisfy their motivational preferences and concords with their needs for self-determination and self-esteem. We suggest that this can be achieved through careful work design which acts at a hedonic level but which is also integrated with normative and extrinsic motivators available to the organisation.

This may seem utopian, leading to the "crowding-out" of productive work as individuals engage only in enjoyable work. The challenge for organisations therefore is to balance the application of HRM practices to achieve a suitable mix for individuals. However, heterogeneity in incentives and practices may be perceived as unfair and difficult to manage, whilst homogeneity may lessen knowledge sharing but is perceived as fairer and easier to manage.

Knowledge Sharing and Motivation in Different Organisational Contexts

The range of motivators at the disposal of an organisation and its underlying motivational basis differ between different types of organisations. Clearly, the available motivators, those used and those that are effective in a windscreen-repair firm (Lazear, 1988) are different to those used in a professional services firm (Morris T and Empson, 1998), and thus the concomitant social dilemmas and potential crowding effects vary between organisational types.

In our analysis, we use ideal-type firm structures derived from Mintzberg (1980) focussing on two types that relate to knowledge intensive firms: the professional bureaucracy and operating adhocracy. Each form has different coordinating mechanisms focussing on the division of labour into distinct tasks and their subsequent coordination. The forms also have distinctive features in respect of their institutional background and the types of knowledge underpinning them. They also differ in their ability to foster the sharing of tacit knowledge and hence their learning and innovative capability (Lam, 2000), implying different approaches to motivation within the two knowledge intensive types.

In contrast to the machine bureaucracy, both types rely on prior high levels of expertise and training, resulting in skills and knowledge that are personally held but need to be shared to meet the organisation's goals. Within both types there is low formalisation of behaviour and relatively high autonomy and grouping is both functional and market oriented, with decentralised control. The social dilemma common to both relates to the degree and extent to which individuals are willing to contribute and use their personal, tacit knowledge to the "public good" of the organisation. The relatively loose structuring and high complexity of the two types coupled with high levels of training and normative alignment contrasts with the machine bureaucracy (Mintzberg, 1980: 330), giving greater scope for the use of normative and hedonic motivation which we contend are necessary components to overcome social dilemmas. These two knowledge-intensive types, however, differ between their main coordination mechanisms, patterns of work organisation and the degree of standardisation of knowledge in use (Lam, 2000). A comparative analysis of these two types will give important insights into the interactive effects of the three different motivators and how these are melded through work norms and HRM practices.

A professional bureaucracy derives its capability from the formal 'embrained knowledge' (Blackler, 1995) of highly trained individual experts operating in an autonomous work environment with coordination achieved by standardisation of skills and knowledge. Task performance can be monitored and regulated by external professional bodies and standards, and extrinsic rewards such as financial gain, professional recognition and career progression. Such experts can be highly mobile in the external labour market and retention can be an issue (Hall and Sapsed, 2005; Robertson et al, 2003). Concordance of values runs along professional lines through embedded professional norms and inculcated organisational ones. The form of working within the professional bureaucracy may be within a single professional grouping or functionally segmented, leading to tensions between epistemic legitimacy, contexts and goals, potentially limiting sharing across functional groups (Ferlie et al, 2005; Kinti et al, 2005). This adds to the complexity of potential social dilemmas and differing effects of motivational perspectives and crowding, as knowledge is held in the individual and affirms their status (Cabrera and Cabrera, 2002). The operating environment is both complex and stable – complexity through the demands of knowledge and skills inherent through extensive training – both initial and continuing – and stable to ensure that the skills become part of the standard operating practices. As administrative control tends to rest within the professional groups and due to the autonomy and heterogeneity of professional groupings, there may be different motivators used within the organisation (Morris T and Empson, 1998). The reinforcement of professional inter-group boundaries with administrative ones is further likely to generate a strong sense of professional rather than organisational identity, and thus alignment with professional rather than organisational norms. Whilst the high degree of task autonomy associated with normative and hedonic motivation enables the generation of tacit knowledge in problem solving, the high level of individual specialisation and functional segmentation means that the tacit knowledge is circumscribed and contained. Underpinning knowledge is codified, with an expectation that the results of knowledge exploitation will similarly be made explicit, for example in the generation of intervention reports and best practices. This further implies that an individual's tacit knowledge will be made public within the

organisation, leading to issues of degree and quality of disclosure. The social dilemma within the professional bureaucracy hinges on whether the individual hoards their knowledge for pursuance of their career, whether to share it within their professional community or to share it within the organisation. The challenge for the organisation is to make use of the high inherent normative professional motivation and to reinforce it with other types of motivators.

The operating adhocracy epitomises the project-based organization, drawing its capability from the diverse know-how and practical problem-solving skills embodied in individual experts operating in market-based project teams. Compared with the professional bureaucracy, there is a lower degree of formalisation of work and knowledge. Unlike the independent experts in a professional bureaucracy, the specialists from different professions in an adhocracy must work together on multidisciplinary teams and combine their knowledge to produce creative solutions for their clients. There is a high identity with the organisation and professional specialism and high levels of autonomy in terms of working practices and team membership. There is little hierarchical structure, with quasi-formal authority given to staff, extending to an extent through to strategy making, emergent from the ad-hoc decisions made for all projects. This implies high levels of participation within the organisation, and lessens differentiation between the planning, design and execution of projects. Knowledge sharing within the adhocracy is person-to-person, although it may rely on codified rules, and shared work practices and routines derived from previous and ongoing projects.

Coordination within an operating adhocracy is achieved through mutual adjustment, necessitating the alignment of the interests and skills of team members towards the project's goal and firm's overall objectives through both professional and consensual norms. This means that high normative motivation and congruence are required to develop team spirit and foster the integration of individual tacit knowledge within the team. Furthermore, because of the fluid nature of the organisation and thus high need for reactivity, barriers to socialisation, contextualisation, common knowledge and expertise levels should be low to facilitate person-to-person knowledge sharing. In this kind of organisation, high powered extrinsic rewards such as performance-related pay and 'up-or-out' promotion rules may be used to align incentives of the individual experts with the interest of the organisation (Morris T and Pinnington, 1998; Teece, 2003). However, the underlying strong, congruent normative motivation that integrates the team may inhibit hedonic motivation in terms of creativity (Amabile, 1997). Management face the difficult task of having to maintain a delicate balance between extrinsic and intrinsic motivational mechanisms. Another major dilemma is that strong normative motivation that serves to integrate individual with the team may inhibit hedonic intrinsic motivation (Hennessey and Amabile, 1998; Seo et al, 2004). The operating adhocracy is an organisation riddled with ambiguities and dilemmas (Mintzberg, 1980; Robertson et al, 2003). It is the most innovative yet least stable organisational form.

SOME EMPIRICAL EXAMPLES

The case studies have been chosen from literature that relates to project and team working. These contexts are seen as becoming an integral way of working in many firms

(Prencipe and Tell, 2001) as they allow disparate resources, including but not limited to knowledge to be brought together for a specific goal. They can, therefore, encompass not only a wide range in terms of function, but also in terms of distribution within and across organizations, leading to issues of knowledge coordination and integration not only during the task itself, but in its implementation and potential re-use, as well as discrepancies in goal relevance and resource attribution (Morris P, 1997).

The cases relate to both the Professional Bureaucracy and Operating Adhocracy. In classifying the cases into one or the other types, the setting, type of work and dynamism have been taken into account. All cases deal with professional/expert work, ranging from the UK's public health sector to change consultants. A detailed summary of the cases is provided in Annex 1.

Case Study Analysis: Professional Bureaucracies

Across the case studies we have looked for evidence of the types of motivators used and their relationship with HRM practices within the firms. Additionally we have looked for effects of crowding and synergy, social dilemmas and the tension between knowledge exploiting and knowledge augmenting modes.

We find that whilst some firms place an emphasis on one motivational type, the interaction between motivators is telling, in some cases 'crowding in' and in others 'crowding out'. Within the professional bureaucracies studied we find two that use predominantly extrinsic motivation with an attendant tendency to diminish knowledge sharing.

In Hall and Sapsed's (2005) study of an aerospace simulator firm in financial difficulty (case 10) all activity is costed and knowledge sharing is seen as a billable activity. Within the firm, reward depends on the project's outcome. Knowledge sharing in this case is reduced to a minimum as taking the time to ask for or share knowledge lessens the potential for reward, leading to opportunistic behaviour. Notably the feeling of the employees was stated as "we are very much structured around how much it costs for me to sit down with somebody for half an hour" (p.67). In this case, the social dilemma is reinforced, as the cost of contributing to the public good by sharing or seeking knowledge outweighs the potential benefit. In their study of a firm of consulting engineers (case 8) facing demographic challenge through the retirement of senior engineers the main route for career advancement was through the use of 'embrained' knowledge. Within the firm, there was little ethos of knowledge sharing and the perceived locus of knowledge ownership was at a personal rather than organisation level, even though individuals recognise that the organisation's resources were used to augment their skills. The social dilemma is twofold as knowledge was not seen as a public good: first, sharing could be detrimental to career prospects - an extrinsic disincentive; second, with little normative motivation to share, even those about to retire and thus no longer competing at a career level, did not share. In these instances, extrinsic motivation crowds-out any inherent normative motivation for employees to share knowledge and the locus of ownership can be seen to be relevant in reinforcing knowledge hoarding.

Ferlie et al's (2005) studies (case 7) of barriers to knowledge transfer and innovation in the UK public health sector, itself comprised of 8 case studies, highlights the tensions between different professional groups within a professional bureaucracy. The social dilemma in some of the cases related to the legitimacy of the public good. Sharing knowledge would lead to a change in the balance of roles and responsibilities between different professional groupings as a result of the innovations in healthcare practice. This raises a further issue, that of competing epistemic legitimacy between professional groups in complex settings, leading to a lack of sharing not only because there are doubts as to the validity of the knowledge claims but also, in extrinsic motivational terms, as the outcome may lead to a loss of autonomy and self-esteem within one of the professional groups. Thus within complex professional bureaucracies there may also be a case for studying knowledge sharing in the light of politics and power as adjuncts to normative and extrinsic motivation as highlighted in de Laat's (1994) study of the effects of matrix management in R&D teams, and Swan and Scarbrough's (2005) study of political effects in innovation networks.

Within professional bureaucracies where knowledge is seen to be shared, the use of a combination of extrinsic motivators that align with the firm's normative and the individuals' inherent motivators seems to have more success. Career progression linked to appraisal systems which take into account knowledge sharing demonstrates recognition through competence and adherence to the organisation's espoused knowledge sharing values. In Hall and Sapsed's (2005) study of a large professional service firm (case 11) the quality of shared knowledge via contribution to a database forms part of the appraisal system, and provides a route for career progression, thus linking sharing to extrinsic motivation. This is coupled with socialisation opportunities to reinforce normative alignment. Self-selected training is available, which further increases the sense of autonomy in the choice of competence enhancing activities. This is echoed in Morris and Empson's (1998) case relating to a professional service firm (case 6) in which knowledge sharing has become part of standard working practice and the rewards for sharing high quality knowledge lead to increased responsibility and further specialisation. This aligns with the individual's inherent hedonic motivation: the extrinsic motivation provided by increased responsibility and further specialisation opportunities lead to possibilities of increased self-esteem and competence-enhancing activity. Normative motivation is further enhanced by regular socialisation opportunities. This has the effect of overcoming the social dilemma by providing a net benefit in sharing, coupled with the underlying need to share as part of the firm's modus operandi. The situation is different for senior partners, where competition is fierce and recognition for innovation is realised through status by co-option to a "think-tank" of knowledge contributors. In order to maintain sharing behaviour, remaining as a contributor is concomitant on the continued sharing of knowledge. Here, the initial extrinsic motivation through recognition is reinforced by a desire to retain status: "It is a great honour to be asked to join this think tank. Joining the group has transformed the behaviour of some individuals who do not normally share their ideas" (Morris T and Empson, 1998: 617).

On similar lines, Pan and Scarbrough's (1998) study of Buckman Labs (case 5) illustrates that normative alignment through working practices in conjunction with

recognition for outstanding contributions and the possibility of sanctions for not sharing are effective in overcoming the social dilemma. The strong knowledge sharing values at an organisational level are bolstered by the appraisal system that legitimises the extrinsic motivation used. The workplace environment, with a lowering of hierarchical boundaries in relation to knowledge sharing and job design that promotes knowledge sharing by routinising contributions to shared knowledge bases lead to a heightened sense of community and cooperation, enhancing the value of contributing to a public good. In this case, extrinsic motivators reinforce normative motivators by rewarding in a congruent fashion.

The normative motivation used within professional bureaucracies builds on the underlying professional norms of their members in terms of quality of shared knowledge and propensity to share. This is reinforced by socialisation and opportunities to exchange knowledge at special events (Morris T and Empson, 1998, case 6) and through changing the normative frame of middle management from “gatekeepers” to “facilitators” (Pan and Scarbrough, 1998, case 5).

Thus, within the professional bureaucracy, where extrinsic motivators that are congruent with organisational normative motivators and the individual’s motivational preferences, and the application of extrinsic motivators is part of the appraisal system, individuals are more likely to expend the effort to share knowledge for the common good rather than their own gain. This, of course, is underpinned by opportunities to share as well as a facilitating environment, implying that job design also plays a fundamental role.

Case Study Analysis: Operating Adhocracies

The cases pertaining to operating adhocracies display traits varying from the professional bureaucracies, in line with Mintzberg’s typology. First, there is a lower degree of formality and flatter structures, changing the underlying normative stance; second the work undertaken is more varied, resulting in unique solutions for clients and hence a tendency for higher knowledge augmenting activity. They all exhibit high levels of autonomy and recognition of expertise and achievement.

There is a high congruence of the normative motivation of individuals and that of the organisations in the case studies, which has been achieved partly through recruitment practices. In Swart and Kinnie’s (2003) software development firm (case 4) employees are recruited not only for their expertise, but also because they “fit” with the firm, and the firm’s knowledge sharing ethos: “Technical ability was not considered the most important element and it was the company’s culture that led the recruitment process” (p.67). This ensured a high likelihood of normative alignment with both the firm and other employees, enhancing goal congruence. Within the software firm, HRM practices are defined with high participation of the employees and thus legitimated. The appraisal system involves peers and line managers, and knowledge sharing is recognised and rewarded through training opportunities, which are not necessarily work related, further enhancing hedonic motivation for employees’ interests outside the firm. Work design through job rotation, mentoring and responsibility for project leadership assigned by expertise fit rather than hierarchy reinforce normative motivation through socialisation, and hedonic motivation through enhanced self-esteem and autonomy. There is also a

sense of challenge and enjoyment in the work: “you will never get bored” (p.68), again suggesting that work environment and hedonic motivation are significant and can outweigh financial incentives as the salary rates lie within the industry and location average in a geographical location with opportunities for work elsewhere. This suggests that knowledge is shared as it is seen as a public good and that it both gives opportunities for competence-enhancing rewards and can be competence-enhancing in its own right.

Recruitment plays a similar key initial role in Robertson et al’s (2003) science based consultancy (case 2) and legal PSF (case 3). Both have stringent practices and recruit on “fit” with the firm as well as expertise, providing normative alignment and a sense of belonging to an “elite”. Knowledge sharing is a core value, and reciprocity is expected. Within the legal PSF, this extends to the use of the individual’s external networks. In both cases, the locus of ownership seems to remain with the individual, but the underlying alignment with the firm’s values and sense of identity with the firm overcome sharing issues.

Within Morris and Empson’s (1998) small change management consultancy (case 1), employees are recruited for their expertise and swiftly inculcated with the firm’s way of working, leading to normative alignment. This acts not only at the level of sharing knowledge, which is perceived as a public good, but also at a deeper level: “If you ask people why they work here they will say, ‘because this company believes in the same kind of things that I believe in...’ (p.620). Knowledge sharing opportunities are provided both formally and informally, and job design promotes high autonomy. As with the software case, there is a sense that individuals’ hedonic motivation is catered for both by the work itself and by the environment provided. Sharing knowledge is one of the key values of the firm and its members which is reinforced by benefit at a collective level, underpinned by hedonic motivation.

In the cases looked at, financially based extrinsic motivation does not appear to be a dominant factor influencing knowledge sharing behaviour. For example, in Robertson et al’s (2003) legal and science based PSFs (cases 2 and 3) salary levels are high, but staff are retained even when offered higher salaries outside. This is compensated for by the perception of working for an “elite” firm and extremely comfortable working conditions, reinforcing inherent hedonic motivation. In Morris and Empson’s (1998) change consultancy (case 1) there is a profit sharing scheme based on salary, aligning gain at a firm level and reinforcing cooperation. Common to all the operating adhocracies is the use of professionally aligned training opportunities, funded by the firms, and in Swart and Kinnie’s (2003) case (case 4), of training opportunities not related to the firm but of interest to the individual, further reinforcing hedonic motivation. Appraisal is measured in terms of outcome and in some cases by contribution to the firm’s knowledge through sharing, reinforcing already high normative motivation for knowledge sharing, changing the focus of the individual from opportunistic to cooperative behaviour. Exceptionally, in Swart and Kinnie’s (2003) case, HRM practices including appraisal are formulated and endorsed by the employees, granting legitimacy to the processes and enhancing a cooperative frame.

All of the operating adhocracies actively promote socialisation through informal meetings and formally through mentoring and job rotation as well as opportunities for

knowledge sharing and provide the basis for these through work design and an enriching environment. Within the operating adhocracy cases, the extrinsic motivators are congruent with the firm's and individuals' goals and are concordant with the firm's underlying ethos of knowledge sharing norms and seek to align with the normative values of the individuals. At a hedonic level, the opportunities for competence building through the tasks themselves and further training, coupled with an enriching and enjoyable environment and job design, suggests that alignment of all three motivators leads to effective knowledge sharing. The emphasis on enjoyment of work echoes Amabile's (1997) suggestion that it plays an important role in creative knowledge augmenting activities.

CONCLUSIONS

This paper has sought to develop a motivation-based perspective to understand the complex dynamics of knowledge sharing in different organisational contexts. It draws on the theoretical insights of the knowledge-based view of the firm and the transaction cost perspective both of which emphasise the centrality of one particular motivational mechanism in governing the behaviour of organisational members. While the former stresses the crucial role of normative intrinsic motivation, the latter gives a pivotal role to extrinsic incentives. In this paper, we propose to bridge the dichotomous view of these two different perspectives by focussing on the motivational processes and the interactive relationships between different motivators. The analysis builds on a three-category taxonomy of motivation, adding a third dimension, 'hedonic motivation', a concept proposed by Lindenberg (2001), to the traditional dichotomy of intrinsic and extrinsic motivation. The core assumption is that the willingness of organisational members to share knowledge can be viewed on a continuum from purely opportunistic behaviour regulated by management authority to an altruistic stance fostered by social norms and group identity. We argue that the interaction and mix of the three different motivators play a key role in regulating and translating potential into actual behaviour, and they underline the complex dynamics of knowledge sharing and creation in different organisational contexts.

The empirical analysis presented in the paper draws on existing case studies gleaned from the literature. Although the cases were not designed specifically to examine motivational issues, we have been able to reframe them to explore the interactive effects of different motivational mechanisms and the ways in which they influence the patterns of knowledge sharing in the two different types of knowledge-intensive organisations. The analysis suggests that within the professional bureaucracy, the social dilemma for knowledge sharing may be overcome through normative motivation, with provision of hedonic motivation through extrinsic incentives such as training and career progression. The UK public healthcare sector case (Ferlie et al, 2005), however, demonstrates the inherent dilemma of knowledge sharing in a professional bureaucracy: strong normative motivation for knowledge sharing within uni-professional communities inhibits the transfer of knowledge across communities. Further, extrinsic incentives may 'crowd out' intrinsic motivation for knowledge sharing because of perceived diminished autonomy and responsibility within professional groups. In an operating adhocracy where interdependent team work is vital, the social dilemma may be overcome through normative alignment reinforced by intensive socialisation opportunities to foster goal

congruence. Extrinsic motivators that align with the individual's hedonic motivation may serve to strengthen the propensity for knowledge sharing. In line with Amabile's (1997) argument, our analysis shows the critical role of hedonic motivation in stimulating creative and knowledge augmenting activities in an operating adhocracy. In both organisational types, normative and hedonic motivators play a significant role in stimulating knowledge sharing. Financial extrinsic incentives do not appear to be relevant on their own, but they play a significant role in either 'crowding out' or 'crowding in' other motivators.

The complex dynamics of interactive relationships among the three motivators, namely, extrinsic, normative and hedonic, suggest that the nature of their relationships may not be reducible to a clear 'yes' (crowding in) or 'no' (crowding out) effect. An important insight gained from the analysis is that there is a continuum of relationship between them. Two fundamental questions remain to be explored. First, in what ways the process of internalisation and socialisation may make extrinsically motivated behaviour autonomous and turn it into a 'hedonic' form of motivation? And second, to what extent normative motivation serves as an intermediating variable regulating the relationship between externally regulated incentives/motivators and internally generated hedonic motivation which appears to be a most critical factor in stimulating creative and innovative behaviour? For future analysis, we propose to integrate further the work of social psychologists with that of socio-economists on incentives and motivation to advance our understanding of knowledge sharing and creation in different organisational contexts.

Annex 1 - A Summary of the Empirical Cases

Case / Reference	Context	Type	Motivators				HRM Practices	Crowding / Alignment
			Context	Extrinsic	Normative	Hedonic		
1 Morris and Emspon, 1988	Small change management consultancy	Operating Adhocracy, Knowledge Augmenting	High alignment with firm's knowledge sharing values; identification with firm	Profit share based on salary; pleasant environment	Reliance on professionalism of staff	Sense of enjoyment working for company	High autonomy through design and type of work	Work and conditions align with self-determination and esteem to promote knowledge sharing; organisation focus through profit sharing and high inherent normative values reduce opportunistic behaviour
2 Robertson et al, 2003	Science based consultancy	Operating Adhocracy, Knowledge Augmenting	High identification with firm; knowledge sharing values are part of recruitment	Professional training; reward linked to outcomes through patents	High knowledge sharing values; professional norms; social identity through professional alignment is high; extensive socialisation	Sense of wellbeing with company; challenging work	Recruitment on fit and expertise; Professional training funded; Appraisal linked to knowledge sharing outcomes	High levels of normative motivation are reinforced by extrinsic and hedonic motivation. Recruitment underpins knowledge sharing values which align with the firm's and individual's normative values. Environment and work design reinforce hedonic motivation.
3 Robertson et al, 2003	Legal PSF	Operating Adhocracy, Knowledge Augmenting	High identification with firm; sharing of external professional networks; recruitment for "fit" and sense of being part of an "elite".	Recognition through competence and professional status afforded by firm; creative, challenging opportunities; high autonomy.	Extensive socialisation opportunities, combined with firm's values of knowledge sharing and professional excellence.	Identification with prestigious firm; excellent working conditions; assignments are an opportunity to learn. Work design enhances hedonic motivation.	Recruitment based on expertise and alignment with firm's professional and knowledge sharing values; new members are intensively exposed to firm's working practices and values	Recruitment for expertise and fit provide a baseline high level of normative congruence with the firm's values: there is an expectancy of sharing and reciprocity. Combination of normative and hedonic motivators with opportunity for autonomous, competence enhancing assignments, and limited but sufficient extrinsic motivators: staff remain with firm even when offered higher salaries elsewhere.

			Motivators					
4 Swart and Kinnie, 2003	Software development	Operating Adhocracy, Knowledge Augmenting	Flat hierarchy with average salary levels. Unique projects building on prior experience and new knowledge. High alignment with firm's values.	Responsibility based on competence for a given project. Training in work and non-work related areas.	Mentoring / apprenticeship model and job rotation lead to socialisation and competence enhancement.	Possibility of non-work related training. Opportunities to work on "cutting- edge" projects.	Recruitment for fit with firm. Practices legitimated by employee committee structure; Appraisal by peers, team members and management. Rewards linked to knowledge sharing.	Recruitment policy ensures competence and normative alignment, reinforced by training opportunities, both external and from peers, building on competences and reinforcing interdependence. Extrinsic motivators reinforce normative and hedonic motivators. Job design and working environment are supportive of a knowledge sharing culture which is expected, recognised and rewarded
5 Pan and Scarborough, 1998	Multinational Specialty Chemicals	Professional Bureaucracy, Knowledge Exploiting	Firm espouses a "knowledge- enterprising culture" (p61). Emphasis on change towards sharing through middle management becoming facilitators rather than gatekeepers.	Exceptional performance recognised and rewarded. Sanctions for not sharing. Self selected professional training opportunities.	Firm-wide values of knowledge sharing. Hierarchical boundaries are softened vis-à-vis knowledge seeking and sharing.	Ease of use and availability of ICT does not raise additional barriers to knowledge sharing.	Exceptional performance is recognised through special events. Knowledge sharing is part of appraisal, is recognised and rewarded. Active approach to inculcating knowledge sharing values of firm.	Extrinsic motivators used reinforce normative and hedonic: training allows enhanced self- competence; recognition for exceptional performance enhances self-esteem. The potential of sanctions for not sharing appears to be effective. Hierarchical flattening in respect of knowledge sharing and seeking emphasises common values and increases self-esteem. Socialisation through mentoring reinforces normative motivation and provides common contexts.

		Motivators						
6 Morris and Emspon, 1988	Tax and audit branch of large PSF	Professional Bureaucracy, Knowledge Exploiting & Augmenting	Highly autonomous within the PSF's framework of working practices. Junior staff engaged in knowledge exploiting; senior staff in knowledge augmenting activities.	Opportunities to specialise. Extensive training. Recognition of competence. Status maintained through continued sharing of high quality knowledge.	Knowledge sharing part of "normal" working practices. Regular conferences allow knowledge sharing and socialisation.	Increase in professional knowledge through assignments.	Greater responsibilities linked to performance, itself measured partially through knowledge sharing. Knowledge sharing is inherent in job design. Training demonstrates investment by firm in staff and enhances competences.	Appraisal process links sharing knowledge with further opportunities enhancing self-determination and self-esteem. Extrinsic motivators are congruent with normative and hedonic motivation. At a junior level, work design reinforces normative motivation; at a senior level, recognition for creativity and sharing has led to a change in behaviour towards knowledge sharing (p617).
7 Ferlie et al 2005	UK public health sector, 8 studies of innovation transfer	Professional Bureaucracy, Knowledge Exploiting	Studies the spread of innovations across settings involving different professional groupings, and potential change in responsibilities and working practices.	Recognition for innovation transfer and adoption. Changes in level of responsibility and working practices resulting from adoption.	Professional level for knowledge sharing.			In the unsuccessful cases, different epistemic and embedded cultures and inter-professional boundaries coupled with a likelihood of change in working practices and responsibilities, lead to a loss of self-esteem and self-determination as the outcome of sharing knowledge, crowding out inherent normative motivation. In the successful case, high socialisation and normative and goal congruence was present, in addition to recognition, enhancing knowledge sharing.

			Motivators					
8 Hall and Sapsed, 2005	Consulting Engineers	Professional Bureaucracy, Knowledge Exploiting	Predominant behaviour is knowledge hoarding, with the locus of knowledge ownership at a personal rather than organisational level.	Career progression through professional expertise	Firm is attempting to promote organisation wide sharing ethos.		Career path is related to experience and professional expertise.	Knowledge is shared within the limits of necessity, with extrinsic motivation crowding out attempts to introduce a knowledge sharing culture. The perception that knowledge owned personally, even if gained through the firm's resources augments knowledge hoarding, by behaving opportunistically.
9 Hall and Sapsed, 2005	Oil and gas services firm	Operating Adhocracy, Knowledge Exploiting & Augmenting	Knowledge augmenting within the operating core. Firm's goal is to accumulate expertise within its staff.	Bonuses for contributing to codified knowledge-base built into project budget	Firm emphasises interdependence on expertise.	Training in professional specialisation; varied, challenging work.	Professional training, mentoring and job rotation. Appraisal system rewards contributions to codified knowledge.	High levels of socialisation and competence enhancement through exposure to different settings is the main vehicle for tacit knowledge sharing, which is not crowded out – the extrinsic motivation relating to competence enhancement aligns with the individuals' own norms allowing increased self-esteem (competence enhancement and advancement within professional bodies). Knowledge sharing achieved through inherent normative motivation in addition to hedonic motivation of job design and training

Motivators								
10 Hall and Sapsed, 2005	Aerospace Simulator developers	Professional Bureaucracy, Knowledge Exploiting	All employees' time is costed. There is a "lessons learned" database, but contribution does not form part of the appraisal process.	Reward linked to project outcome and targets.	Inherent normative motivators		Appraisal and reward linked to meeting project targets.	Extrinsic motivation linked solely to target meeting, and knowledge sharing opportunities are limited by the "billable" aspect of person-to-person sharing which combine as time taken to seek or share k is deductible from the project's budget, thus lessening the potential target meeting ability. In this case, extrinsic motivation crowds out inherent normative motivation resulting in knowledge hoarding.
11 Hall and Sapsed, 2005	Management consultancy – large PSF	Professional Bureaucracy, Knowledge Exploiting	Need to retain knowledge for re-use between projects, achieved through databases, which is part of job design. Firm faces high staff turnover.	Career advancement through high quality contributions.	Knowledge sharing ethos underpinned by work practices		Appraisal process linked to contributions	Extrinsic motivation for high quality knowledge, coupled with the firm's knowledge sharing values, supported by working practices lead to knowledge sharing. This does not address the issue of staff retention, implying that there are other motivators which are not addressed.

REFERENCES

- Amabile T (1993) Motivational Synergy: Toward new Conceptualizations of Intrinsic and Extrinsic Motivation in the Workplace, *Human Resource Management Review*, **3** (3), 185-202.
- Amabile T (1997) Motivating Creativity in Organizations, *California Management Review*, **40** (1), 39-58.
- Bénabou R and Tirole J (2003) Intrinsic and Extrinsic Motivation, *Review of Economic Studies*, **70** (3), 489-520.
- Blackler F (1995) Knowledge, Knowledge Work and Organizations: An Overview and Interpretation, *Organization Studies*, **16** (6), 1021-1046.
- Brown J S and Duguid P (1998) Organizing Knowledge, *California Management Review*, **40** (3), 90-111.
- Cabrera A and Cabrera E F (2002) Knowledge-sharing dilemmas, *Organization Studies*, **23** (5), 687-710.
- Christensen P H (2005) *Facilitating Knowledge Sharing: A Conceptual Framework*, [WWW] <http://uk.cbs.dk/content/download/33323/466533/file/SMG%20WP%204-2005.pdf> (29/12/2005)
- de Laat P (1994) Matrix management of projects and power struggles: A case study of an R&D laboratory, *Human Relations*, **47** (9), 1089.
- Deci E L (1976) *Intrinsic Motivation*, Plenum, London.
- Deci E L and Ryan R M (1985) *Intrinsic Motivation and Self-determination in Human Behaviour*, New York, Plenum Press.
- Deci E L and Ryan R M (1987) The Support of Autonomy and the Control of Behaviour, *Journal of Personality and Social Psychology*, **53** (6), 1024-1037.
- Ferlie E, Fitzgerald L, Wood M and Hawkins C (2005) The Nonspread of Innovations: The Mediating Role of Professionals, *Academy of Management Journal*, **48** (1), 117-134.
- Foss N (2003) Selective Intervention and Internal Hybrids: Interpreting and Learning from the Rise and Decline of the Oticon Spaghetti Organization, *Organization Science*, **14** (3), 331-349.
- Frey B (1992) Tertium datur: Pricing, regulating and intrinsic motivation, *Kyklos*, **45** (2), 161-184.

Frey B and Jegen R (2001) Motivation Crowding Theory, *Journal of Economic Surveys*, **15** (5), 589-611.

Frey B and Oberholzer-Gee F (1997) The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding- Out, *American Economic Review*, **87** (4), 746-755.

Gneezy U (2003) "The W effect of incentives" [WWW]
<http://www.cramton.umd.edu/workshop/papers/gneezy-W-effect-of-incentives.pdf>
(22/05/2006)

Gottschalg O and Zollo M (2006) "Motivation and the Theory of the Firm" [WWW]
http://www.hec.fr/hec/fr/professeurs_recherche/upload/cahiers/CR833GottschalgMotiv&theory.pdf (16/07/2006)

Hall J and Sapsed J (2005) Influences of knowledge sharing and hoarding in project-based firms In: Love, P, Fong, P & Irani, Z (Eds) *Management of Knowledge in Project Environments*. Oxford, Elsevier Butterworth-Heinemann 57-79.

Hennessey B and Amabile T (1998) Reward, Intrinsic Motivation, and Creativity, *American Psychologist*, **53** (6), 674-675.

Huber G P (2001) Transfer of knowledge in knowledge management systems: unexplored issues and suggested studies, *European Journal of Information Systems*, **10** (2), 72-79.

Kinti I, Lloyd S, Simpson A and Hayward G (2005) *Managing Collaborative Expertise: Issues and Challenges* Proceedings of OKLC 2005, Boston, MA, [WWW]
http://orgs.man.ac.uk/projects/include/experiment/kinti_hayward.pdf (10/04/2006)

Kreps D M (1997) Intrinsic Motivation and Extrinsic Incentives, *The American Economic Review*, **87** (2), 359-364.

Lam A (1997) Embedded Firms, Embedded Knowledge: Problems of Collaboration and Knowledge Transfer in Global Cooperative Ventures, *Organization Studies*, **18** (6), 973-996.

Lam A (2000) Tacit Knowledge, Organizational Learning and Societal Institutions: An Integrated Framework, *Organization Studies*, **21** (3), 487-513.

Langlois R and Foss N (1999) Capabilities and Governance: the Rebirth of Production in the Theory of Economic Organization, *Kyklos*, **54** (2), 201-218.

Lazear E (1988) Performance Pay and Productivity, *American Economic Review*, **90** (5), 1346-1361.

Lindenberg S (2001) Intrinsic Motivation in a New Light, *Kyklos*, **54**, 317-342.

- Locke E A and Latham G (2004) What should we do about Motivation Theory? Six recommendations for the Twenty-first Century, *Academy of Management Review*, **29** (3), 388-403.
- Mintzberg H (1980) Structure in 5's: A Synthesis of the Research on Organization Design, *Management Science*, **26** (3), 322-341.
- Morris P (1997) *The Management of Projects*, Thomas Telford, London.
- Morris T (2001) Asserting property rights: Knowledge codification in the professional service firm, *Human Relations*, **54** (7), 819-838.
- Morris T and Empson L (1998) Organisation and Expertise: An Exploration of Knowledge Bases and the Management of Accounting and Consulting Firms, *Accounting, Organisations and Society*, **23** (5/6), 609-624.
- Morris T and Pinnington A (1998) Promotion to Partner in Professional Service Firms, *Human Relations*, **51** (1), 3-24.
- Nahapiet J and Ghoshal S (1998) Social Capital, Intellectual Capital, and the Organizational Advantage, *Academy of Management Review*, **23** (2), 242-266.
- Nonaka I and Takeuchi H (1995) *The Knowledge Creating Company*, Oxford University Press, Oxford.
- Osterloh M (2005) Human Resources Management and Knowledge Creation In: Nonaka, I & Kazuo, I (Eds) *Handbook of Knowledge Creation*. Oxford University Press, Oxford.
- Osterloh M and Frey B (2000) Motivation, knowledge transfer, and organizational forms, *Organization Science*, **11** (5), 538-550.
- Osterloh M, Frost J and Frey B (2002) The Dynamics of Motivation on New Organizational Forms, *International Journal of the Economics of Business*, **9** (1), 61-77.
- Pan S L and Scarbrough H (1998) A Socio-Technical View of Knowledge-Sharing at Buckman Laboratories, *Journal of Knowledge Management*, **2** (1), 55-66.
- Prencipe A and Tell F (2001) Inter-project learning: processes and outcomes of knowledge codification in project-based firms, *Research Policy*, **30**, 1373-1394.
- Prendergast C (1999) The Provision of Incentives in Firms, *Journal of Economic Literature*, **37** (1), 7-63.
- Robertson M, Scarbrough H and Swan J (2003) Knowledge Creation in Professional Service Firms: Institutional Effects, *Organization Studies*, **24** (6), 831-857.

Seo M-G, Barrett L F and Bartunek J M (2004) The Role of Affective Experience in Work Motivation, *Academy of Management Review*, **29** (3), 423-439.

Spender J-C (1996) Making Knowledge the Basis of a Dynamic Theory of the Firm, *Strategic Management Journal*, **17**, 45-62.

Swan J and Scarbrough H (2005) The Politics of Networked Innovation, *Human Relations*, **58** (7), 913-943.

Swart J and Kinnie N (2003) Sharing knowledge in knowledge intensive firms, *Human Resource Management Journal*, **13** (2), 60-75.

Teece D (2003) Expert talent and the design of (professional services) firms, *Industrial and Corporate Change*, **12** (4), 895-916.

Tsoukas H (1996) The Firm as a Distributed Knowledge System: A Constructionist Approach, *Strategic Management Journal*, **17** Winter Special Issue, 11-25.

Williamson O E (1987) *The Economic Institutions of Capitalism : Firms, Markets, Relational Contracting*, Collier Macmillan, London.

Williamson O E (1996) Economic Organization: The Case for Candor, *Academy of Management Review*, **21** (1), 48-57.