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Social Capital and Knowledge Integration in an ERP Project Team: The Importance of Bridging AND Bonding

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A project team, set up to design and implement a large-scope IT system, is essentially tasked with integrating distributed knowledge. This suggests that the social capital of members will be organizationally important. However, we suggest that in understanding the relationship between social capital and knowledge integration within a project team, it is necessary to distinguish between two forms of social capital – external bridging social capital and internal bonding social capital. We argue that for the effective mobilization of 'weak' social capital bridges for collective purposes, there is first a need to create 'strong' social capital bonds within the project team so that it becomes a cohesive social unit that will be able to effectively integrate knowledge that is acquired through members' bridging activity.

Introduction

Companies are increasingly using temporary project teams to manage IT initiatives that are one-off and large-scope (Markus, Tanis and Fenema, 2000). Such large IT projects are, however, often not successful so that it is important to identify areas where they can begin to go awry (Kumar and van Hillegersberg, 2000). In this paper, we consider the problems experienced in such projects from a knowledge integration perspective, drawing on empirical material from a project that was set up to design and implement an Enterprise Resource Planning (ERP) system. ERP systems are based on developing a common IT infrastructure and common business processes that will support integration of the total business activity (Markus, Tanis and Fenema, 2000). They have been developed in response to the need to manage across global businesses, which is difficult when each business is using different systems and technologies (Imra, Murphy and Simon, 2000). ERP systems have diffused extremely rapidly and extensively, especially across large firms, based on their purported benefits, especially in terms of improved productivity and speed (Davenport, 1998). However, evidence is accumulating that many organizations have failed to achieve such benefits (Stein, 1998).

In considering the problems experienced in large-scale IT projects from a knowledge integration perspective we have chosen to adopt a processual account, which takes as its starting point that all human knowledge is developed, transmitted and maintained in social situations (Berger and Luckmann, 1966). From this perspective knowledge is not a 'resource' that can simply be transferred (Barney, 1991); nor is it simply embedded in organizational processes (Winter, 1987). Rather, from this perspective, knowledge is seen to emerge as people interact recurrently in the context of established routines and procedures. Therefore, when firm members participate in organizational activities or practices, they have the potential to simultaneously

create or extend the firm's knowledge (Spender, 1996). Thus, we analyse the problems experienced in such IT projects based on their requirement for the integration of knowledge. In order to do this the individual project members need to draw upon their social capital (Nahapiet and Ghoshal, 1998) to access dispersed knowledge. However, as we will see, individual project members may chose not to use their social capital to gain access to knowledge that is of benefit to the project and/or may not be able to effectively integrate knowledge within the project team.

The paper is structured as follows. The literature review begins with a consideration of the importance of knowledge integration for large-scale IT design and implementation projects and focuses on the problems associated with this in terms of the dispersed and ambiguous character of organizational knowledge. The literature review then highlights the crucial role that social capital plays in facilitating this knowledge integration. The next section outlines the research method that has been adopted and then the case itself is described, followed by a more detailed description of the ERP project team and its activities. The analysis and discussion of the case is provided in the next section and in particular we focus on the conditions that appeared to be absent in the case and which accounted for the personal, rather than collective focus of social capital appropriation. The paper ends with some conclusions about the antecedents of social capital for effective knowledge integration within a project team.

Knowledge integration and social capital

Once a company has decided to adopt an ERP system and has selected the particular variant, the system needs to be configured to suit the particular organizational context. This involves mapping existing organizational processes ('as is'), identifying the organizational processes that are embedded in the ERP software and then defining new organizational processes ('to be') that 'fit' both the software and the organization (Soh, Sia and Tay-Yap, 2000). Typically, a multifunctional implementation project team will be set up to configure and implement the ERP system. The first task of this team then, is to map existing 'as is' organizational processes. Yet this poses a fundamental problem because, as will be discussed below, complete knowledge of these current processes does not exist, since organizational knowledge never exists in a concentrated or integrated form (Becker, 2001). Exploring the character of organizational knowledge is thus important for understanding the task of mapping existing and defining new organizational processes.

The dispersed and ambiguous character of organizational knowledge

Tsoukas and Vladimirou (2001, p. 981) define organizational knowledge as 'the set of collective understandings embedded in a firm, which enable it to put its resources to particular uses'. While they note that much of this organizational knowledge may be formal, there is always and inevitably an informal aspect to this knowledge, which is generated in action. Collins (1990) refers to this as heuristic knowledge and it is the knowledge that arises as individuals engage in their daily routines and improvise (Orlikowski, 1996) in response to particular situations that are encountered. This may or may not be shared with others, but certainly heuristic knowledge based in action has been found to contribute significantly to efficient working (e.g. Orr, 1996). To map existing organizational processes, then, involves accessing and integrating these collective understandings, which are both dispersed and ambiguous.

First, in terms of dispersion, as Nelson (1991) notes, knowledge of a particular practice or process does not form a complete and coherent body of knowledge that can be precisely documented or even articulated by a single individual. Rather, it is a form of knowing that exists only through the interaction among various collective actors (Gherardi and Nicolini, 2000; Lave and Wenger, 1991). In terms of the ambiguity of knowledge, it is also clear that each individual has only a partial view of what constitutes a particular organizational process, since knowledge is inherently indeterminate (Tsoukas, 1996). Each individual sees the organizational process through a particular interpretive lens, which means that another individual may see that organizational process differently. In particular, individuals from different departments or functions are likely to see an organizational process differently because departments have different

'thought worlds' and so focus on different aspects of a process (Dougherty, 1992).

Importantly, this suggests that holistic knowledge of a process does not exist prior to its documentation so collective knowledge of that process has first to be generated through interaction and communication, not only between members of the project team but also between the project team and others within and even outside the organization (Hislop *et al*., 1997). Mere access to dispersed knowledge is only the starting point, because the ambiguity of knowledge means that information may not resolve misunderstandings (Weick, 1995). Rather, people need to communicate, assimilate cognitive frameworks and develop shared understandings (Becker, 2001). So, the integration of knowledge within the project team does not simply involve the mechanistic pooling of the various 'pieces' (Knights and Wilmott, 1997). Rather, the integration of knowledge depends on joint knowledge generation. Cook and Brown (1999) describe the process of collective knowledge generation, as a 'dance' since communication within a group does not simply add knowledge to each individual's knowledge. More importantly, communication and exchange within a team can also evoke novel associations, connections and hunches such that new meanings and insights are generated.

In the context of an organization-wide IT system, such as an ERP system, this issue of knowledge integration is particularly important. Simply computerizing existing organizational processes will not surface the benefits of such a system (Lee and Lee, 2000). Rather, the benefits of an ERP system emerge from its potential to combine information across processes that have traditionally been independent especially in highly diversified and geographically dispersed organizations, such as in the case company reported here. In order, however, to exploit this potential, the system will need to be designed to ensure this. This will only happen if the project team access and integrate knowledge about the different organizational processes and generate ideas about new ways of doing things that build on the potential for combining information. For example, data on absenteeism is typically collected in very many different ways in different parts of a business so that it is virtually impossible to either monitor this, and/or explore problem areas where intervention might be useful. Similarly, there are, in many companies, numerous skills databases that have been independently set up in different areas but that are run by very different principles so that looking across the company is virtually impossible. In an ERP project team, then, there is a need first to develop an understanding of current 'as is' processes and then to integrate knowledge in order to generate new 'to be' processes that identify innovative, more effective processes that capitalize on the potential of an integrated IT system.

The importance of intellectual and social capital in the project team

Most fundamentally, the successful completion of these activities will depend on selecting project team members with appropriate knowledge, skills and expertise, so ideally project teams will be chosen so that their members have a mix of knowledge and capabilities in order to ensure team diversity and representation (Schneider and Northcraft, 1999; Teram, 1999). We can refer to this as the intellectual capital of the team – the 'knowledge and knowing capability of the collectivity' (Nahapiet and Ghoshal, 1998, p. 245). While intellectual capital and its mix across the team is important, it is unlikely that project team members will have all the relevant knowledge and expertise necessary to design the system and redesign organizational processes. Rather, these project team members will need to network with a range of other individuals in order to make sense of both organizational processes ('as is' and 'to be') and the ERP system. Becker (2001) refers to this as the strategy of substituting knowledge by access to knowledge. In doing this they will be drawing upon their collective *social capital*.

Despite the widespread use of the concept of social capital, the term is used differently by different authors (Hirsch and Lewin, 1999). Nahapiet and Ghoshal (1998, p. 243) define social capital as 'the sum of actual and potential resources within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through the network'. Their definition and discussion focuses in particular on the public good that social capital can provide for an organization. However, others focus more on how social capital is used as a private good (Leana

and Van Buren, 1999). Researchers treating social capital as a public good see it as an attribute of a social unit and suggest that the benefit for the individual in enhancing and leveraging social capital is indirect and secondary (Putman, 1993). Those treating social capital as a private good consider how individuals use their social networks for direct personal benefits (Belliveau, O'Reilly and Wade, 1996). From the private-good perspective, social capital is created by rational, purposeful individuals who build this capital to maximize their individual opportunities and to further personal projects. Nevertheless, it is argued that within the context of a team or an organization it is possible to find some balance between the interests of the individual and the interests of the collective, if a conscious effort is made to achieve this (Leana and Van Buren, 1999).

This raises the question as to what conditions lead an individual team member to use their social capital for the public collective good (i.e. to access and use knowledge relevant for the project) rather than, or at least as well as, their own private good. This issue will be explored in the case study presented later. Leana and Van Buren (1999) provide some indication of this when they argue that providing stability in employment relations is a key way to ensure that the benefits from social capital are balanced between the needs of the individual and the needs of the organization.

The Nahapiet and Ghoshal (1998) definition of social capital also focuses on the way networks provide an individual with an access or bridge to the information of others. Other definitions focus on the 'bonding' aspect of social capital (Adler and Kwon, 2002). The 'bridging' view sees social capital as a resource inhering in a social network that can be appropriated by a focal actor based on relations with others in the network (Burt, 1992). Individuals who provide a 'bridge' across divided communities (structural holes) are important, since they play a brokerage role. The level of associability between the parties can be relatively limited and trust can be fragile (Leana and Van Buren, 1999). Such weak ties (Granovetter, 1973) with many external parties can, however, be sufficient to ensure access to information and knowledge from across the organization (Hansen, 1999). The 'bonding' view, by contrast, focuses on the collective relations between a defined group (Coleman, 1988). Social capital relates to the internal structure and relations within this collective. It ensures an internal cohesiveness that allows the collective to pursue shared goals. This bonding view of social capital starts from the premise that levels of associability and trust between the parties in the network must be strong to ensure that collective goals are pursued (Leana and Van Buren, 1999).

Adler and Kwon (2002) note that some definitions do not distinguish whether the focus is internal (bonding) or external (bridging). They argue that this is preferable because, in practice, both 'bridging' and 'bonding' will influence behaviour in all situations. They argue against 'bifurcating our social capital research into a strand focused on external, bridging social capital and a strand focused on internal, bonding, social capital' (*ibid.*, p. 35). They develop a definition of social capital that does indeed include both internal and external ties: social capital is 'the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence and solidarity it makes available to the actor' (ibid., p. 23).

In the context of an IT implementation project team it is quite clear that both the bridging and the bonding aspects of social capital are highly relevant. Thus, each individual has a unique network, which will provide a bridge to access the knowledge of others. Project team members, then, need to mobilize their social capital in order to access distributed knowledge about organizational processes. At the same time, strong bonds within the project team are necessary since, as already discussed, knowledge integration is a social construction process by which members negotiate, achieve and refine a shared understanding through interaction, sensemaking and collective learning (Ayas and Zeniuk, 2001; Boland and Tenkasi, 1995). Considering these two aspects of social capital then, suggests that it might be helpful to explore each separately, since it would seem possible for the bridging and bonding aspects to vary independently of each other.

In light of these arguments, the aim of this paper is to explore a particular example of a project team involved in designing and implementing part of an ERP system in a large multinational organization. Of particular interest is the extent to which they used their social

capital bridges for the collective public good of the project versus their own personal good. At the same time, we consider how far, if at all, this team bonded into a community able to integrate knowledge and so generate ideas about new organizational processes. We demonstrate that the bridging and bonding aspects of social capital should be considered independently. Indeed, the case study suggests that the bonding of the project team may be a prerequisite for the use of social capital bridges for the public good to benefit the collective by enabling members to integrate knowledge.

Research method

The research described in this paper adopts an interpretivist approach exploring and conceptualizing meanings emerging from the interaction of social actors (Walsham, 1983). Here we attempt to unravel the antecedents to the collective use of social capital during an ERP implementation. The research was based on only a single project within one company. This was seen very much as an exploratory case that would help us develop some initial conceptual insights for future research. The actual study was conducted between 1997 and 2000 in Quality Engineering Limited (QEL), a large global engineering corporation, headquartered in the Midlands, UK. The theoretical insights developed by Alder and Kwon (2002) and Leana and Van Buren (1999) were incorporated in the research analysis. Klein and Myers (1999, p. 75) endorse the approach of building on existing theories rather than using a grounded-theory approach, noting that a theory can be used in interpretive research as a 'sensitizing device', to view the world in a certain way.

This empirical study focused on analysing one element of a large ERP project, within QEL. In this company the implementation of the ERP system was extensive, involving systems integration across all of the company's functions. This study focuses on the HR functional ERP 'pillar'. One member of the research team was on site as a participant observer on many occasions over an 18-month period, talking informally to project team members, attending project meetings and generally observing what was happening. In addition, semi-structured interviews were undertaken. The project team leader was interviewed approximately once a month, with the interviewing beginning shortly after he had been assigned to the role, and continuing until the project was effectively put on hold (see below). In addition, all of the ERP/HR project team members (n = 9) and the process owners (n = 10) were interviewed after the project had been ongoing for about nine months. These interviews were of about one hour's duration, were tape-recorded and later transcribed. In total, 19 formal interviews were conducted with process owners and team members, and in addition about 12 interviews were conducted with the project leader. These later interviews were not tape-recorded at his request. In conjunction with the above relatively-structured interviews, approximately 40 informal interviews were conducted, often without prior arrangements, during visits to the site to observe team meetings or talk to the project leader. Conducting these informal interviews was important and useful to unravel insightful stories about the progress of the project.

Adopting multiple data collection methods aided triangulation – multiple interpretations (Klein and Myers, 1999) – as a means of enhancing the validity of the findings (Denzin, 1988). Prior to data analysis, preparatory research activities included transcribing interview tapes, typing and filing research notes, summarizing documents and clustering the data. In particular, we explored the empirical material in terms of the interplay between the utilization of social capital and knowledge integration.

Case description

QEL has 40 000 employees located in more than 30 countries. Following the appointment of a new CEO, a decision was made in 1998 to implement an organization-wide ERP system to replace approximately 1600 extant legacy systems. These legacy systems comprised both off-the-shelf packages and systems developed in-house; some were interfaced with others, but many were stand-alone. This led to a considerable waste of resources and also meant that it was difficult to collect information at an enterprise level (or indeed even at a business-unit level). This influenced the decision to implement an ERP system. The system selected was SAP/R3. One of the QEL divisions had already decided to

adopt SAP/R3 in its engineering function, so it was decided that the whole company should then adopt this as standard to ensure system integration. There was no systematic evaluation of different systems at this stage, at least not in respect of the HR pillar. The directive was simply that this was the system to be adopted.

The ERP team members' involvement

The ERP/HR project was initiated by the company senior HR director. He asked one of his corporate HR managers (Nick) to be the project leader. Nick used his existing network of relationships to bring together the project team – five individuals from QEL and two external IT consultants.[1] In order to understand more about the motivations of those involved we first consider this in relation to the individual members before explicitly considering the bonding and bridging activities of the project team.

Nick started the team recruitment process by engaging Caroline, who had reported to him in his previous role. Nick had worked with Caroline for some time, so was aware of her skills and competencies in different roles. Given that QEL had previously decided to outsource the IT function, she was one of the few remaining individuals directly employed by QEL who had a combination of IT and business expertise. She agreed to be on the team, but only on a part-time basis whilst continuing to work in her previous role in HR planning. During the interview, Caroline stated that she had agreed to join the team for strategic career reasons. She had decided to have a baby some time in the future and thought that getting some SAP experience 'under the belt' would make it easier to find a job once she returned from maternity leave. As the project began to falter she spent increasing amounts of time in her functional department and left midway through the project to have a baby. At a follow-up informal interview she said that she had chosen to do this rather earlier than originally intended because she felt that the ERP/HR project was not going as well as she had anticipated.

Bob had many years' experience as the HR manager to one of the business units in which the new ERP system was to be implemented and thought that being involved in the project was an exciting opportunity. Surprisingly, although Bob had no IT knowledge (describing himself as computer illiterate), he told the interviewer he was first attracted to the job because of the systems element. As Bob said,

> 'I said [to Nick] I just wanted to be in computers, in systems and Nick said ''That's not what it's about, what we need is somebody who has operated in the HR function, in the line, who knows how things currently work and has the relationships'' It sounded exciting. Here was a real opportunity to reform the way we do things'.

Bob's previous job had been in the South West region of the UK, so the job transfer required a physical move. His wife remained in the family home and Bob obtained temporary accommodation in order to be close to the project. He had little subsequent involvement with those with whom he had previously worked, even to the extent of not knowing what had happened to the new HR manager who had taken over from him.

The HR/ERP system was to include a payroll capability, so Nick gave a presentation about the project to the payroll management team, trying to encourage someone to join. Robin attended this presentation and, despite his recent promotion to Payroll Manager, agreed to join the project. Robin saw this as an excellent opportunity to develop his IT skills, something he had wanted to do for some time:

> 'The main attraction for me to join the project was SAP, the system itself, it clearly seems to be the way forward. It's had a lot of publicity'.

Once joining the project (supposedly full-time), like Caroline, Robin maintained his links with his functional area and regularly returned to do work there whenever he was needed, explaining,

> 'I've been supporting the payroll function . . . with the actual modifications that are needed to the current payroll software'.

Susan started slightly later than the other members as she replaced Margo, who had to leave the project for personal reasons. Susan had

[1]Two initial members of the team – Louise and Margo – were replaced quite early on. Both were living several hundred miles from where the project was based and found it difficult either to commute or work at a distance.

been working in an HR functional role and so had general knowledge of the HR processes at QEL. She was not happy in this role, however, and so applied to join the project team in order to get out of a line HR job that she did not like: 'It's more for myself really . . . it's what I can get out of it'. However, once working on the project she continued to look for other opportunities within QEL that would provide her with a more permanent role. This search intensified as the ERP project seemed to falter.

Rebecca was a placement student taking a business information systems degree who had been assigned to the project team. Nick had felt that this would provide her with valuable experience and that she could be useful in some of the more simple and mundane tasks that would need to be done. At the start of the project she was keen and eager, seeing it as a good opportunity to develop her skills. However, because she was given little opportunity over the course of the project to undertake more challenging tasks than administration, she became increasingly despondent and was relieved when her placement period ended.

The two project members from the outsourced IT function were assigned to work on this project as the technical experts. They had little relevant business-related knowledge and saw their role as merely translating and configuring the SAP system, based on the decisions made by the project team. As Glenda said,

> 'All the business side of the project should be handled by QEL people. My direct involvement will only be with the relevant work package owners who are team members. We don't deal with anybody else in QEL. If there are any other people at QEL who need to be dealt with, then it's some member's role to do that. We're just contractors.'

This was for them merely another IT project. They explained their detached attitude as arising from the fact that neither had seen an IT project through to completion within QEL, despite both having considerable experience in the company. They had either been moved to another project before completion or the projects they had worked on had been abandoned.

The project team members, as illustrated above, had relevant and diverse knowledge and experience, but their own goals and desires were also influential in their desire to join the project team. This influenced both their bonding and bridging activity once involved in the project, as will be seen.

Bonding within the ERP/HR project team

These individuals then, who had never previously worked together, formed the core project team and were sited in a designated work area – a large open-plan office housing all the ERP teams from the various functional 'pillars'. As each member joined the project at a different time, there was no team induction. In spite of this, they did not receive a satisfactory individual induction, nor was any effort put in to team building, as described by three different team members describing their first day on the project:

> 'The day I arrived I was a bit naffed off because I was here on my own, nobody was even here. They'd gone away and he [Nick] left me a note'.
> 'There was a QEL company induction but no team induction. I came in on the Tuesday morning and Robin said 'there's the toilets, there's the coffee.' That was it'.
> 'I think that's where Nick might have improved, actually. From day one I just sat at the desk and that's what I do now . . . I learned about the project by attending a communication day for the business and a very good video was shown by Mike Hammer'.

Nick, the project manager divided the project into a series of independent work packages, each focused on describing the 'as is' and 'to be' processes for a different HR functional area. Each work package was assigned to only one project member so there was no interdependence across the team. Work packages were assigned based on members' existing knowledge and experience. This process analysis was undertaken by conducting process workshops (see below). After an abortive attempt by some to work together, each member conducted his/her workshop independently and then proceeded to map out the particular processes associated with his/her functional area. There was very little attempt to share these maps or to see overlaps between them. Indeed, it was only near the end of the project that the project leader, on his own, attempted to put these maps together to develop an overall map of HR processes.

Having conducted each of the process analyses the next task was to implement the design in the ERP system, according to the proposed 'to be' processes. Unfortunately, the project team had limited IT expertise (see above), so they relied on the two IT consultants to do this work. The IT experts themselves did not see any need for involvement with potential users, working on each HR function separately, gathering information from each of the work package owners in turn.

While this process mapping was ongoing, a company HR conference was held and the HR/ERP project team had a stand at this conference. This activity was designated to two of the team members, with the others not attempting to help pull things together for this, as illustrated in the quote below from Rebecca:

> 'For example, we had to take part in the latest company HR conference to tell over 350 HR specialists what we were doing. Only Susan and I were on the presentation stand because no-one else [on the HR/ERP team] would do it . . . Bob and Robin just gave us copies of their process diagrams, they didn't put any effort into it at all. They didn't even go and see it while we were doing it. And they're part of a team and they are on show at that conference because they're part of a team, you'd think they'd want it to be as good as it could be because it reflects badly on us all'.

Another task that the project team were involved in was running a series of workshops to inform others in HR about the project. Three team members in particular were engaged in this activity, but in reality there was very little collaboration on this, even though the workshops were actually being jointly presented, as illustrated in the following quote from one team member:

> 'The workshop wasn't planned very well. Bob and Susan needed to sit down and plan it. They needed to help each other. We did have one meeting. Bob just didn't want to know about it and he wasn't in for the rest of the week. He turned up at ten past 9 and the event started at 9 o'clock. Susan was absolutely furious. I got the full front of it, all her f-ing and blinding because it reflects badly on people. I mean, [the participants] thought yesterday was a complete and utter waste of time'.

Team members were also invited to attend training to learn about the technical issues of the SAP system that they were going to introduce. However, there was only one team member – Robin – who actually took advantage of this. When Robin was asked, during an interview, whether he had tried to share knowledge he had learnt at these courses with other team members, he replied:

> 'I don't . . . it's something we could probably improve on. But I still believe, though, to be honest, that the other team members should be attending the courses'.

Throughout this period, as team members engaged in their individual activities, regular team meetings were held. However, observations indicated that there was very little interaction and dialogue during these meetings. Rather, they were dominated by the senior IT expert (Glenda), who used the meetings to inform the rest of the project team about technical issues. As one of the team members stated:

> 'I'd rename our team meeting 'the Glenda meeting' because after two hours she has talked 90% of the time'.

Moreover, team members were often absent from these meetings. For example, in the early days of the project Margo, who did not relocate to the head-office site, regularly did not attend meetings. As one of the team members noted:

> 'So that's another bloody cock-up as well, isn't it? I mean, someone from the South West that shouldn't really be [still down there] and Nick taking her as a favour really. Because when we discussed it, what we thought about her coming and being based down there, we all said is she going to be able to manage that? But, again, Nick is a pushover. Because Lynette [the HR resourcing director responsible for Margo] has said to him – she [Margo] hasn't got a job, her husband has moved, she's got to live in the South West. So he sort of said OK . . . She doesn't seem to want to be here and she tells us all. Like, she lets us know pretty much that. Her attitude isn't the best, is it'?

After about 12 months of working on the project, senior management decided there was a need to justify the costs of an integrated HR system. This suddenly occurred as the costs of the overall ERP project were beginning to spiral while the company's economic condition was worsening. Each project team member was then asked to identify the benefits of the system for their particular functional area. However, despite the

fact that the benefits from an ERP system were expected to arise largely from the integration of information across traditionally separated HR areas, there was no attempt to work collaboratively on this. In all, the project team presented a business case to the steering committee of senior managers on three occasions. On no occasion was this group convinced by their arguments and after 18 months the project was put on hold and the team disbanded.

As indicated from these illustrations above, then, the level of bonding activity within the team was very limited. More explicitly, team members themselves noted this lack of team cohesion. For example, Robin said:

> 'We don't actually network together a great deal, we don't. We've got our own packages and payroll for me is quite standalone, there's obviously links with the person on the admin side but as far as the team goes there isn't really a need very often to work together . . . there's no day to day interaction, its only in specific cases where we might work together, if there is a workshop being held, and support each other in arrangements and in the workshop itself'.

As we have already noted, even where there was a need to work jointly, for example on the workshops, in reality there was only very minimal collaboration. There was little or no attempt to work jointly on work process definitions, nor to identify links across the work package areas, even though the team was co-located. Thus, the team consisted of individuals, all focusing on their small part of the project, with very little social interaction. As Rebecca reported:

> 'I know they've got a job to do, but how anyone can sit all day and just sit there at a computer screen and just work all day, you know there's no breaks or no social chatter . . . there's no social interaction at all. I don't see it in the rest of the room. Everyone's commented on it. I said to the training team [who came to visit the section] they just won't talk. And they stood up and looked at my team and they were all just sitting there with faces as long as anything. But then, they don't work as a team, they don't do anything as a team, they never go out. All the other teams go out . . . We don't even go to the pub at lunchtime'.

Similarly, Robin, when asked to describe the team drew the team as a crossword box, with each team member ensconced in his or her own little box. And Susan stated:

> 'I think this is not a team that is made of people that are "together". I see this ERP/HR team as all individual people . . . everyone is, in a way, out for themselves'.

Bridging to others outside the project team

In the above section, we have seen that the team engaged in a number of bridging activities with others in the organization in the course of undertaking the tasks on the project. In this section we will consider this bridging activity in more detail. First, in terms of the process-mapping workshops, each project member was instructed to bring together a group of about ten people who had knowledge of existing processes in the particular area for which they were responsible. Despite the fact that the ERP system was to be introduced globally, these three-day workshops involved only individuals from Head Office and did not involve the IT consultants. Team members asked people whom they knew to participate in these process workshops. As one process owner (see below for information about process owners) commented:

> 'I think there has been a missed opportunity . . . It's a very QEL thing . . . people are very much into themselves . . . {Do you think that will change in the future?} No, the same people do the same thing . . . A lot of it is QEL culture so that you build up your own network'.

While there was discussion during the workshops about current and 'to be' processes, there was little conflict and few new insights arose. This is not surprising given that the membership of these workshops was relatively homogenous so that the diversity of processes that existed within QEL globally was not represented. As Pfeffer (1981) notes, one way to reduce conflict is to exclude those with different ideas and understandings. In most cases, the process owner responsible for the particular HR area was present at the three-day workshop. Many said during interviews that they had learnt nothing new. Indeed, many of these process owners commented on the fact that they had done such process mapping before, in some

cases on a regular basis, and had felt 'angry' that the project team had not attempted to understand this previous activity, but had simply started the process mapping as if nothing had ever been done before. As one process owner remarked:

> 'Why the hell did we waste a day doing what we had already done'?

Process owners were actually supposed to be overseeing the project. They were senior managers working at Head Office in the HR function. Each process owner was given responsibility for overseeing a particular functional area of the HR/ERP system, based on existing responsibilities. So the Director of Human Resourcing was the process owner of the human resourcing work package, and so on. The individual team members, as work package owners, needed to work closely with their respective process owner in order to ensure that there was agreement about what they were doing. However, the level of interaction between the different process owners and work package owners was very minimal. Thus, many process owners did not get actively involved in the ERP project, to the extent that several, when asked during the interview, did not know who was their 'work package' owner. Some said they did not even understand the term 'work package owner' and most of them could not name a single other process owner. This was due partly to the project team members, as work package owners, not contacting their respective process owners. For example, one process owner, when asked about contact with his work package owner commented, during a period of intense activity among the project team as they were trying to justify the costs of the project:

> 'Probably once every two months. Very little. Nothing much seems to be happening'.

However, it was also the case that most of the process owners were not really interested in getting involved, having other priorities for their time. For example, one process owner commented in response to a question about the amount of contact with their work package owner:

> 'Zero (laughs). And it's partly my fault. I haven't exactly made myself easily available. But I don't know who in the business is. I mean, I think a lot of it is HR people doing it themselves. Big mistake. It ought to be their customers'.

At an even more senior level, the HR Executive Director did not seem to understand or to be interested in the project. For example, at the high-profile internal HR conference described above, where the ERP/HR team had a big display of their work, the HR Director, who was attending the conference and was visiting the various stands, failed to come and talk to ERP/HR project team members or to show any interest in the progress being made. Two of the authors were at this conference and it was very apparent that the ERP/HR project team felt let down by the HR Director's lack of apparent interest.

In terms of wider networking across the organization, the project team did put on the information workshops (described in the section above) for all HR employees, and attendance at these was mandatory. However, as indicated in one of the quotes above about these workshops, the reactions of participants was not positive and feedback from staff was that they had not learnt much. Observation of these events suggested that most participants had not been persuaded by the workshop that ERP was an important issue for them and most saw the ERP project as irrelevant to their day-to-day activities. This is probably not surprising given the poor coordination by the project team of these events (see above).

As senior managers began to ask the project team to justify the costs of the project, informal discussions made it clear that project team members were beginning to feel insecure about the future of the project and became concerned about its possible abandonment. Observations demonstrated that they began to spend increasing amounts of time networking back in their old functional home. When asked about this, team members suggested that this was to ensure ongoing employment should the ERP project cease. Thus, it was evident that most of the team were focused on maintaining strong network connections with their colleagues to ensure they could 'go home' or were using their networks to scan for more permanent opportunities within QEL, especially as the project began to falter. So, Caroline and Robin put considerable effort in to maintaining ties with former colleagues in order to secure their own career options. As Robin commented: 'I could always fall back into the payroll manager's role'. Ex-HR officer Susan used her personal networks to seek out job opportunities. They were, in effect, building up

the goodwill that others had towards them, in the anticipation that effects would flow from this in terms of job opportunities. One project team member summed up this networking for personal benefit very nicely when she said:

> 'From my experience of the whole HR/ERP project, I think everyone is in a separate community looking after themselves . . . for a lot of people, this is their chance to impress and impact because they've got to get a job at the end of the project. So they've got to fit back in civilisation. They're all out scoring points'.

The exception to this was Bob, who essentially cut himself off from his previous networks, neither using them for personal benefit nor for the benefit of the project. Given that he was the oldest member of the team, and so close to retirement, he arguably had less interest in this 'point scoring'.

Discussion

This paper is based on only a single exploratory case, so any conceptual insights will need to be verified through subsequent research. With this caution in mind, there do appear to be some interesting theoretical insights that can be derived from this case. First, in this particular ERP project team, the individual members did appear to be using their social capital, but more for their own personal good than for the public good of the project. The reason for this appeared to be linked to the insecurity of the project. Indeed, as the project became more insecure, the individual team members increased their networking with their functional departments, but very much to secure their own personal goals. This provides support for Leana and Van Buren's (1999) suggestion that providing stability in employment relations is important to ensure that social capital is used for public rather than, or at least as well as, personal good. In this case, stability in the project was certainly not assured and this became increasingly obvious to project members as their attempts to justify the project costs were rejected by senior managers. It was not simply the HR director who failed to support the project. The process owners, who were supposed to be the immediate sponsors of the project, remained uninvolved and seemingly uninterested. They neither communicated with the project team nor with each other, even though such collaboration was essential to identify the potential for integration across processes (Lee and Lee, 2000).

Of course, the issues of strong commitment and support from senior managers have been previously identified in the literature as central to successful projects in general (Eby *et al*., 2000) and to successful IT implementation projects in particular (Thong, Chee-Sing and Raman, 1996).

In this paper, we have been able to demonstrate and analyse the impact of this absence in terms of the effect on the appropriation of social capital. So, while social capital is typically created (or destroyed) as a by-product of other activities in a particular social setting (Coleman, 1988), it can be transposed to other situations (Nahapiet and Ghoshal, 1998). So, project members could use their existing social capital, built up over time through their interactions in other jobs within QEL, in their new role on the HR/ERP team. The analysis presented here does not contradict this, but it does highlight that individuals have to choose to appropriate their existing social capital for either their personal and/or the public good. In the case considered here, project team members chose to appropriate resources from their existing networks more for the benefit of their own personal projects than for the benefit of the project. This suggests that in projects where team members do not feel secure, the resources available through social networks may be invested more for personal goal fulfillment, than for organizational or project goal fulfillment.

The case also highlights some interesting issues in relation to the bridging – bonding aspects of social capital (Adler and Kwon, 2002). Our research suggests that it is useful to distinguish between the 'bridging' (external) and 'bonding' (internal) aspects because, while both are essential to the knowledge integration task that a project team is faced with, they are derived from different sources and have different effects. Bridging occurs where ties between people are 'weak', thus providing brokerage opportunities within the social system (Burt, 1992). Within the context of an IT project team, there is a need to develop and use external linkages because these bridging relationships are necessary for access to knowledge and information that is dispersed across the organization. While there must clearly

be some level of shared understanding and willingness to communicate between the project team member and others within the organization, the levels of associability and trust (Leana and Van Buren, 1999) are likely to be relatively low. Indeed, as Hansen (1999) demonstrates, weak external ties facilitate the cost-effective search for information, where strong ties can actually hamper this. On the other hand, the IT project team must also develop 'strong' relationships internally if the information and knowledge derived from these external networks is to be integrated. These internal ties, then, need to be based on much higher levels of associability and trust than those external ties needed for accessing information. Bonding as well as bridging, therefore, is necessary for knowledge integration.

In terms of bonding, our observations and interviews highlighted that the HR project team in QEL failed to develop strong internal ties (Granovetter, 1973) and develop a sense of a shared purpose. In other words, they did not 'bond' as a team and develop a cohesive, internal network (Coleman, 1988) – depicting the team as existing each in his/her own crossword box is a clear indication of this. There was little attempt to actively 'build' a team. The project manager did not encourage the team to socialize with each other and instead simply discussed with each individually their role in the project as they joined the team. Indeed, the way the tasks were divided up actually discouraged this. Thus, tasks were divided between team members in a way that minimized the need for regular interaction and collaboration, undermining the nurturing of teamwork between members (Knights and McCabe, 2000). The ties between members remained weak with the effect that there was very little feeling of group solidarity and/or sense of a shared purpose.

Yet, as the literature makes clear, such bonding is essential for effective knowledge integration because it ensures the development of some common or redundant knowledge (Nonaka, 1994) and allows for the 'generative dance' (Cook and Brown, 1999) that is needed to really expose and explore the different 'thought worlds' (Dougherty, 1992) that each represents. Each individual worked on his/her own work package and so when the team was asked to provide a justification for the cost of the whole HR/ERP project, they were unable to fully explore the benefits from an ERP system, since these arise largely from the ability to integrate information from across departments and businesses. Given the independent way in which the team worked, they did not attempt to integrate their respective knowledge and could not provide a convincing case about the potential of an ERP system.

In terms of bridging, the empirical material indicates that team members did engage in bridging activities for the public good of the project. For example, they used their existing networks to identify individuals to participate in the three-day process mapping workshops. However, in doing this they relied on rather a limited network of colleagues within the Head Office. In other words, the network structure that was used was rather narrow, with few structural holes, thus restricting the information flow (Burt, 1992) so that few new insights were developed from the process mapping exercise. Nevertheless, the lack of team bonding meant that even when they did bridge with others in the wider organization, they did not integrate this knowledge within the project team. Thus, the information and knowledge retrieved as an effect of the social capital bridges that existed between the project team members and the wider organization, could not be effectively used for the public good of the project, even though the bridging aspect of social capital for their own personal good could be said to be effective – at least to the extent that they all got jobs back in their departments when the project was halted. We can predict that, even if each individual project team member had extended his/her reach, and so accessed knowledge from more diverse sources, the impact of this would have been limited because there was no place to explore and discuss this within the project team. The internal bonds within the team need to be in place to integrate the knowledge acquired through the external bridges. While the public-good bridging was, therefore, not very effective, the private-good bridging was much more successful, at least in terms of ensuring that all the team members got jobs they were happy with back in the organization once the project was abandoned.

This conceptual analysis has been partially predicted by those who have identified task contingencies as important influences on the form of social capital that is most helpful. For example, Uzzi (1997) suggests that if a task

requires trust and cooperation then strong ties with a small number of partners is preferable; whereas if a task requires economic rationality, weak ties with a larger number of partners is better. Similarly, Hansen (1999) argues that weak ties facilitate cost-effective search for the transfer of explicit knowledge, while strong ties are more appropriate for the transfer of tacit knowledge. Here though, we are not suggesting a task contingency analysis; rather we have considered how a processual account of knowledge integration demonstrates the need for different forms of social capital over time.

Conclusion

The results from this case analysis suggest that there are at least two aspects to the effective appropriation of social capital for the public good of a collective, in this instance a project team, tasked with designing and implementing the HR part of an ERP system. First, within the project team, members need to develop strong bonds with each other so that they have a shared sense of purpose and some common understanding. While the research on groupthink (Janis, 1972) alerts us to the fact that team cohesion can create conformity pressures, our research indicates that the absence of team bonds is equally debilitating, especially where knowledge integration is necessary. Second, team members need to use their social capital bridges for the public good of the project – to access dispersed organizational knowledge that is going to help them complete the project objectives.

In terms of strong internal bonds, associability and trust need to be high (Leana and Van Buren, 1999). This is a prerequisite for using the knowledge that team members may access from their individual networks outside the project team, since knowledge integration must involve dialogue and negotiation (Ayas and Zeniuk, 2001; Boland and Tenkasi, 1995). Where team members have not worked together as a unit before, considerable effort and resource will need to be invested by both managers and team members in the development of such a community (Brown and Duguid, 1991) to enable members to engage in the 'generative dance' (Cook and Brown, 1999) that leads to knowledge integration. Where this 'strong' internal social capital is not nurtured, as in the QEL project team, the knowledge accessed from individual project members' social capital bridges will be of limited value because it will not lead to knowledge integration that provides the *raison d'être* for the team's existence in the first place. In other words, for the effective mobilization of 'weak' social capital bridges for collective purposes, there is first a need to create 'strong' social capital bonds within the project team so that it becomes a cohesive social unit that will be able to effectively integrate knowledge that is acquired through the bridges. We therefore believe that, contrary to the argument of Adler and Kwon (2002), the bridging and bonding aspects of social capital must be distinguished.

In terms of the appropriation of social capital for personal good this internal team bonding is not a prerequisite, since there is no need to integrate this knowledge with the knowledge of others. Thus, individuals can nurture their social capital bridges for their personal benefit in any circumstance. Here, however, we are more interested in understanding the circumstances in which social capital bridging activity is used for public rather than personal good. We can, therefore, suggest the following proposition that can be explored in future research:

> Where a (IT) project team needs to integrate knowledge that is widely dispersed across groups and organizations, team members will only appropriate and be able to use the knowledge from their wider networks (their external social capital bridges), for the collective good of the project when they have first developed strong bonds (internal social capital bonds) with each other.

In other words, developing strong team bonds provides the antecedent condition in which individual team members are more likely to at least balance the extent to which they use their social capital bridges for the public as well as the private good. Where this strong bonding does not exist, first team members are likely to feel limited normative commitment to using their social capital bridges for the public good of the project. And second, and perhaps more importantly from the knowledge-integration perspective considered here, even if they do use their social capital bridges to access relevant and important knowledge for the project, the internal team context will not provide the environment for the effective integration and use of this knowledge.

The conclusions in this paper also suggest some practical implications for individuals who are managing large-scope IT projects. In particular, they highlight the importance of induction within the project team, even when project team members are drawn from within the organization. Managers may have a tendency to think that induction is unnecessary because everyone is at least familiar with other team members. However, to develop the levels of associability and trust that are characteristic of the strong bonding form of social capital requires more than familiarity. Rather, it depends on encouraging sociability across the project team as well as a willingness on the part of project team members to subordinate their individual desires to project objectives. It also depends on developing resilient trust based upon ongoing reciprocity norms, which can survive the occasional transaction where costs outweigh benefits (Leana and Van Buren, 1999). Effort put into team building during the early stages of the project would therefore appear to be essential for effective knowledge integration later. Also, the conclusions suggest that dividing up tasks within the project in a way that creates interdependence between project team members is important. Otherwise, by definition the team will achieve no more than a mechanistic pooling of knowledge that will not produce the knowledge integration leading to creativity and innovation that are needed in large-scope IT projects.

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