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Abstract

This paper contributes to better understanding the dynamics of practically supporting the knowledge creation processes within a project management context. The case study findings presented in this paper describe and theorize about how the 'learning relationships' between project team participants present significant impacts on the immediate situated learning activity of a project team and ultimately also, for individual and team performance and development. As is argued in this paper, through project team participants publicly exploring and communally reflecting on this sociological element (amongst others), they aid their situated knowledge creation processes and help develop their skills in 'learning how to learn'.

KNOWLEDGE CREATION AND SHARING IN PROJECT CONTEXTS: THE SITUATED IMPACT OF OUR LEARNING RELATIONSHIPS

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ABSTRACT

This paper contributes to better understanding the dynamics of practically supporting the knowledge creation processes within a project management context. The case study findings presented in this paper describe and theorize about how the 'learning relationships' between project team participants present significant impacts on the immediate situated learning activity of a project team and ultimately also, for individual and team performance and development. As is argued in this paper, through project team participants publicly exploring and communally reflecting on this sociological element (amongst others), they aid their situated knowledge creation processes and help develop their skills in 'learning how to learn'.

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> *"I think our team isn't comfortable with silence where they can think about how things are impacting upon them or ask, "What's my learning from this?" What actually often happens is a reflection will be made about a certain relationship dynamic and one of the guys will say, "that happens in the other project team and you can see it in the example of blah, blah, blah." They take the energy away from the opportunity to improve their own relationships by looking at the issue in something that's not attached to them personally. I think they can really move this project and their learning forward if they can actually spend time thinking about, "how does that impact on me?" … "What does that mean for me personally?" When I can actually hear their conversations using words like, "for me", or "in my experience", or "honestly in my opinion" … then when that happens that will be a real milestone."*
>
> *(Project team member)*

The above quotation from an interview with a project team member involved in this project case study highlights three important points. First, she recognized defensive behaviour in her colleagues in the project team when they confronted issues about their own learning relationships. Second, these comments indicate that the project team participants were exploring some rather difficult socio-cultural issues around their learning. Third, this exploration through their socio-cultural milieu during the course of their team meetings included deep personal reflections on their team learning processes and on their own learning behaviours. These reflections serve as both an illustration of the learning activities of the project team involved in this study and as a catalyst to explore and speculate upon how relationship issues between project team members might constrain or alternatively support the situated learning or knowledge creation processes of project participants. Questions then emerge about just what are the issues within the relationships that might impact such situated learning and how might a project team collectively deal with them? In addressing this topic, this paper makes a contribution to better understanding the dilemmas of practically supporting intra-project knowledge creation and sharing and also helps address a gap in knowledge in the project management and organizational learning literatures.

An article by Sense (2003), which expounded the importance of developing a deep understanding of the learning phenomena within projects, also offered a new conception of a project team from a learning perspective which took account of this relationship dynamic. That conception was built upon situated learning theory and its construct of a 'community of practice' (Lave & Wenger, 1991; Wenger, 1998; Wenger, McDermott & Snyder, 2002; Brown & Duguid, 1991; Saint-Onge & Wallace, 2002) wherein, the context and its myriad sociological aspects mediate the cognitive learning activities of an individual and are therefore an integral part of the learning or knowledge creation process (Antonacopoulou, 1997: 6; Gherardi & Nicolini, 2000). The situated dimension of learning is concerned with the practical and social aspects of learning within a context. Situated learning theory presumes that most learning occurs on the job in culturally embedded ways, and it therefore evolves through the participation and interaction of people and their collective sense-making activities as they develop their competencies and construct their identities to function effectively within a community or domain of practice (Lave & Wenger, 1991; Brown & Duguid, 1991; Cook & Yanow, 1993; Gherardi, 1999: 112; Gherardi & Nicolini, 2000; Wenger, 1998; Wenger et al., 2002; Dixon, 1999: 43-62). This situated dimension of learning always frames the cognitive dimension or, as Gherardi, Nicolini and Odella (1998: 274) state, "cognitive and practical activity can thus be pursued only within this world, and through this social and cultural network." By implication, attending to the sociological aspects of a situated learning context is important in positively

assisting the entire learning process of individuals. This situated perspective encourages us to understand project learning and behaviours and actions through the experiences and interactions of project participants in which individuals make sense of their project activities (Thomas, 2000: 25, 42; Schwandt, 1994: 118). Thus, the 'reality of learning' in a project team environment can be considered constructed, maintained and reproduced through human practices within the project social context.

Consequently, this new conception of a project team from a learning perspective (Sense, 2003) posited that project teams are not just groupings of independent persons operating and learning independently of each other or independently of external influences. Instead, project teams are social constructs that involve participants in multifarious forms and levels of interaction and participation with each other while simultaneously being members of multiple 'communities of practice' external to the project team setting. In that way, a project team represents an embryonic form of a new 'community of practice'. Participants' membership of these multiple 'communities of practice' means that these 'communities of practice' collide or abut each other within the project team setting, and this is where major learning and negotiation opportunities emerge. At these points of abutment or engagement, situated learning can be impeded or supported by sociological elements within the project milieu. This paper elaborates upon one facilitating or constraining sociological element for situated learning, which is part of a group of elements that have been identified through the work of this study. The sociological element under focus is interpersonal in character and assists the learning exchanges to occur across these multiple 'communities of practice' boundaries. This element is termed 'learning relationships' and is defined as, *'The relationship one has with another person/s from which one acquires or imparts knowledge or skill to increase one's capacity to take effective project action.'*

The Importance of Understanding the Project 'Learning Relationships'

Project participants' 'interrelating' involves them in learning processes of sense-making, observations, conversations and dialogue within the temporal project team practice. The explicit and implicit social relationships between 'interrelating' people form the conduits upon which these types of learning processes are enabled. For example, Baker (2002: 166) asserts that, "At the heart of conversational learning is social, relational learning among people who each have experiences and ideas that become vital resources for new possibilities yet to be discovered." Concomitant to those perspectives is the recognition of the importance of building relationships to facilitate learning (Bryans & Smith, 2000: 228-235).

A number of authors in the project management field (For examples see Pinto, 1998: 27-42; Frame, 1999: 8; Keeling, 2000: 107-110; Briner, Hastings & Geddes, 1996: 114-116; Boddy, 2002: 135-156; Pinto & Millet, 1999: 119-133; Verma, 1995: 11; Gido & Clements, 2003: 324-335; Frame, 1995: 53-82; Posner & Kouzes, 1998: 252-253) stress the importance of building effective formal and informal working relationships in projects, because people in project teams necessarily engage multiple interested stakeholders at multiple levels (even without formal authority) to effectively manage a project. For example, Posner and Kouzes (1998: 252-253) suggest that the most important relationships for learning in projects involve mentors, immediate supervisors and one's peers i.e. stressing both the importance of having effective working relationships and the learning value gained from the more immediate and situated working relationships one has with colleagues. Some researchers have specifically identified that the establishment and fostering of the informal learning relationships most significantly aids project learning activity. For example, in a study of learning across projects by Keegan and Turner (2001: 92-96), their respondents claimed that the informal networks within their companies were the most important conduit for transferring learning between individuals and project teams. Those respondents also posited that their informal networks required deliberate attention and nurturing to ensure and to enhance the strengthening and the speed of their learning and development processes.

Whether it is formal or informal, the interaction between people is essential in knowledge creation, in knowledge diffusion and in providing a powerful avenue for 'tacit' knowledge to be socialized and articulated - as espoused for example, in the work of Nonaka and Takeuchi (1995). Smith (2001: 311-321) claims that such 'tacit' knowledge exchange is reliant upon relationships which are open, friendly, unstructured and that allow for spontaneous sharing of knowledge. To achieve those types of relationships where both tacit and explicit knowledge is readily shared and new knowledge created, requires as Swan, Newell, Scarbrough and Hislop (1999: 271-273) suggest, "… an investment in interpersonal interrelationship building, so that those involved can make sense of and envisage the broader goals of the system." This opportunity to access and share tacit knowledge residing within participants in a project team provides a further important stimulus to better understand and build the learning relationships between them.

Based upon the case study examined, this paper provides an empirical insight into how project participants' 'learning relationships' can constrain or alternatively support situated learning in project management practice. Consequently, it also argues that project team participants need to directly engage with this 'learning relationships' element if they seek to enhance their participation, interaction and learning exchanges and thereby aid their situated learning process within a project team. The discussion to follow briefly outlines the research method employed and the study context. The following section then weaves together relevant theory and illustrative empirical examples, to elaborate upon how the 'learning relationships' exhibited in the project case of this study impacted project situated learning activity.

THE RESEARCH METHOD AND STUDY CONTEXT

Underpinning the findings presented in this paper is a qualitative and longitudinal participative action research study of project based learning, which engaged a case involving an active project team pursuing an organizational change project. For a definition and detailed explanation of the participative action research employed in this case see Badham and Sense (2001) and Sense (2005). Empirical data was accumulated over 18 months through undertaking multiple observations of, and through participation in, project team meetings and reflection sessions; serial semi-structured interviews and feedback sessions with the project team members; serial 'learning workshops' facilitation, and; documentation reviews.

The study was conducted in a heavy industrial engineering operation in Australia that processes coal into coke for use in the local blast furnace or for export. The continuous operation involves approximately 400 employees and is a relatively large capital intensive and people intensive operation within the integrated steelmaking operations on the site. In June 1998, a new plant manager transferred to the plant with strong workplace culture change credentials from his work at two other plants within the same company. With the recognition that there was a charter for change developed within the broader organization, the new manager set about to initiate processes to re-design the organization of the plant. That goal was pursued in a context of competition from cheap overseas producers and alternative technologies, pressures from the community and the government to dramatically reduce environmental emissions, and a need to involve a workforce that had traditionally held a low self-image and a low trust in management.

Within the operation, the primary method engaged by the plant manager to establish sustainable change throughout the plant had been the creation of a number of 'learning forums' operating at senior management, middle management and shop-floor levels, as well as cutting across those levels. These forums had been developed to work within the vision, mission and values that had been more or less imposed by the new plant manager and senior management in the company. However, the forums had a purposeful and strong emphasis on ongoing individual and organizational learning as a means to promote, consolidate and sustain change. One of these forums or project teams, which became the project case study, was the 'Cokemaking Leadership Team' within the plant. This team had a brief to redesign and integrate their roles in alignment with the new organizational vision and values. Their explicit (and nebulous) aims for this complex organizational change project were to: redefine their roles and relationships; practice new leadership skills, and; learn and to 'learn how to learn' throughout the project process. This project team initially consisted of three core senior manufacturing management personnel (later expanding to 15 members). The learning behaviours and activities observed and experienced by these three core members of this project team (i.e. Ken, Ted and Anton) provide the rich empirical data supporting the findings from this study.

HOW DID THE LEARNING RELATIONSHIPS EXHIBITED IN THIS PROJECT CASE CONSTRAIN OR SUPPORT SITUATED LEARNING?

The learning relationships impact on the situated learning activity of project participants involved in this study, is best addressed through an elaboration on the two empirically derived 'conditioners' of those relationships. These 'conditioners' either challenged and changed, or, reinforced the participants' current learning relationships within the project, and consequently, were primal influences on the observed learning behaviours of the participants. These conditioners involve:
❑ Attitudes to public exposure and public scrutiny of perceived personal matters
❑ Preparedness to explore one's learning relationships with others outside of the existing relationship frameworks and viewing relationship problems as major learning opportunities

As evidenced in the discussion to follow, a learning relationship conditioner that tended to constrain situated learning processes involved the project team participants' not wanting one's

performances/failings/beliefs/fears/weaknesses to be exposed to one's peer group or oneself for public scrutiny. This conditioner resulted in the project team participants exhibiting 'defensive deflection' onto other 'victims' and in shoring up their own protective veneers (i.e. applying strategies to avoid such discussions) in case of future attack. In over 36 project-team meeting sessions, and during semi-structured interviews or learning workshop activities, I observed such situations occurring at every meeting event. That being, at those events, at least one and sometimes more of the participants would demonstrate some form of defensive behaviour.

In contrast, a 'learning relationship' conditioner which tended to aid situated learning between the project participants, involved the team's preparedness to actively explore new relationship frameworks contrary to existing models, and in so doing, they viewed relationship problems not as problems to be quickly solved but rather, exploratory learning opportunities. Henceforth, this conditioner offered challenges to, rather than reinforcement of, current relationship frameworks that limited new learning potential, and encouraged different attitudes and approaches towards coaching and mentoring of colleagues.

Attitudes to Public Exposure and Public Scrutiny of Perceived Personal Matters

At first glance, one might question the necessity to publicly expose and scrutinize aspects of one's behaviour in a project team, particularly when the usual focus in a project team is primarily concerned with completing a task. However, if participants begin to value 'learning and creating' as much as 'task' completion within these project contexts, then project participants will appreciate the value in exploring the deeper dimensions of their individual and collective behaviours (Raelin, 2000: 78). This appreciation and acceptance of the value of learning in projects is a fundamental catalyst for developing learning at the project team level, since it provides the overarching internal stimulus for participants to 'want' to build their learning relationships, and to 'want' to deal with other identified sociological constraint/enabler elements for learning identified through this study. Building upon that internal stimulus has to be a strategy for learning in a project, which is the key to addressing these conditioners of the learning relationships. An exploration of participants' learning behaviours involves project participants in providing and accepting positive and negative feedback, dealing with internal and external politics, negotiating with others and publicly testing individuals' espoused values and beliefs (Raelin, 2000: 122). These processes involve confrontation with defensive routines, which has parallels at the organizational learning level.

At the organizational level, Argyris (1990: 25-44) states that his Model 1 governing values (i.e. unilateral control, to win and not lose, to suppress negative feelings, and a focus on action strategies) lead to organizational routines involving deflecting or avoiding embarrassment or threat, wherein, learning opportunities are stifled. For example, a team member may deflect, disengage or fail to initiate team discussion on issues where they have failed to complete their designated project task, or when they feel less competent or confident about a project topic and do not wish to compromise their perception of their reputation with colleagues in the organization. Organizational defensive routines are therefore anti-learning, overprotective and self-sealing. Failure to discuss these defensive routines means they will continue to proliferate, and when they are discussed, the individuals involved may get in trouble (Argyris, 1990: 30). The result being, that the defensive routines are protected and reinforced by the people who prefer they do not exist. This protection is covert and undiscussable and these defensive routines force people to take actions to achieve political and task goals via circuitous relational routes rather than directly dealing with the issue and people concerned – which in turn, reinforces or 'shores up' the defensive routines which caused the situation in the first place (Argyris, 1990: 30-34). Organizational defensive routines make it highly likely that individuals and groups will not detect and correct errors that are embarrassing and threatening because the fundamental rules are to bypass the errors and act as if they are not being done, and, make the bypass undiscussable, and make its undiscussability, undiscussable. Argyris (1990: 43) further suggests that attempting to engage these defensive routines for reflection and to reduce them only activates the defensive routines and strengthens them. Nevertheless, in such a situation can participants afford to retreat from this challenge? As exemplified in this study, I consider that participants really have no choice but to systematically confront these defensive routines otherwise they remain locked into a pattern of systemic ignorance, limited change and limited learning. In that sense, they need to be cognisant of the initial responses or challenges to reflection within such defensive routines, and continue to 'push' the issues, wherein, they test their own endurance and perseverance in pursuit of learning. Therefore, at the level of the project team, not to deliberately confront these defensive routines only perpetuates the existing conundrum, and in the project team of this study, would have defeated the very goal of achieving significant learning and organizational change. These confrontational dilemmas are illustrated by Ken (from the project team case) in an interview session when he commented, *"… So getting some of those 'undiscussables' out is really where the barrier is, and I suppose it's been quite a deliberate exercise to get to know each other a bit*

better and become more confident to share and be more confident to know how to share some of these 'undiscussable' things."

In the project team involved in this study, confronting difficult relationship issues and defensive routines was therefore a fundamental activity of the project process. Learning within this project team situation was reliant upon the participants' willingness to admit mistakes or deficiencies in their actions, to engage conversation about those issues, and subject themselves and their experiences to the constructive criticism of their peers. Yet, as Raelin (2001: 17 and 24) noted, not all people in all settings have such a psychological [and organizational] security to undertake such reflective practice, since such public reflection would place participants in a 'vulnerable state'. In highlighting this hesitancy to exposing one's own deficiencies or vulnerabilities, one participant (Anton) during the first research cycle offered, *"I am pushing myself outside my familiar comfort zone* [to discuss my deficiencies] *– and I am trying not to jump off the cliff without a parachute. Moving from my 'old' job to my 'new' job* [with its expectations] *is hard."* and, *"We seem to have, for whatever reason, shied away from actually looking at our roles and perhaps thinking about how could we do things differently."* Such an inwardly focused communal discussion on their roles might mean the possible exposure of one's own deficiencies or perceived weaknesses – despite the opportunity for learning. To avoid that risk of exposure (later acknowledged by the participants), the participants practiced a process of what I have termed, 'defensive deflection'. I have constructed this term through the consideration and utilization of Argyris's (1990, 1993 and 1999) extensive commentary on defensive reasoning and defensive routines, and on my observations of these project participants, which revealed that they did more than just seek to avoid the examination of their own behaviours and the testing of their mental assumptions and conclusions drawn (Argyris, 1999: 232). They also regularly deflected their discussions/reflections on difficult relational issues onto others, or other groups, when they did not wish to evaluate themselves and their own learning actions/behaviours. These repeated actions of deflection provided the means to achieve the avoidance of difficult issues. Therefore, this term of 'defensive deflection' more eloquently reflects the observed defensive behaviour experiences of the participants in the project team examined in this study.

As part of their individual interview and feedback sessions, and also during the feedback sessions with the full project team, the core participants in this study were introduced to this 'defensive deflection' term. They seemed to readily comprehend and accept that this was a significant issue for them in their learning activities. During one interview, Ken surmised that he felt defensive deflection was culturally entrenched in the organization by stating, *"Defensive deflection is a behaviour that exists fairly deeply and is probably largely unconscious I suppose, whilst I am working within my tangible comfort zone. One general observation that has been made about the three of us and the Cokemaking Leadership Team too ... is around avoiding tough discussions* [particularly around non-rational issues] *... one of the avoidance mechanisms is often that deflection ... I suppose that's a behaviour which comes back at us in other parts of the organization ... for example, We're the best shift ... its the maintenance people and the other shifts that muck us up."* At the organizational level, Argyris (1990: 34) also noted this process where individuals learn to distance themselves from feeling responsible for creating defensive patterns – it becomes the other people who are at fault. In avoiding discussion of the project team's own relationship issues in one project team meeting, Ted offered his observations of another project team's barriers to their learning relationships, by suggesting that, *"They should be in the plywood business given the amount of veneer abundant in the working party process."* The implication being, that the team he observed had layers upon layers of barriers to learning within their relationships. With this comment, he momentarily deflected the attention of his peers in this project team onto another group's relationship issues, which prompted their active dialogue on what were their perceptions of that other project team within the organizational change program. All these avoidance actions are in alignment with what Argyris (1999: 130) describes as how professionals avoid learning i.e. professionals use their criticisms of others to protect themselves from the potential embarrassment of having to admit to their responsibilities in the less than perfect outcomes achieved. Ken noted in one of the very first learning structure workshop sessions at the start of the third research process cycle, *"Defensive deflection is probably one of the strategies we will all use. As you have discovered, purposeful deflection is one of our strong points."* At that time, Ken's comment strongly reflected his feeling that the team still did not have robust learning relationships in which they felt confident to freely exchange views and to publicly reflect on their difficult relationship issues.

Furthermore, the willingness and opportunities for participants to 'expose themselves' to their peer group and to explore new relationship frameworks, was also affected by their heavy involvement in, and responsibilities for activities of the broader organizational change program, and daily operational activities. Consequently, during the earlier activities of the project team, the participants' application to building their learning relationships was a more responsive and opportunistic activity rather than a systematic and planned action. As Ted noted, *"We were trying to do things differently in developing the learning relationships but it was done by the 'seat of the*

pants' rather than by a cunning plan with everything falling into place." Some commentators might suggest that taking such an opportunistic approach to developing their learning relationships is perfectly satisfactory. However, a 'seat of the pants' approach fails to adequately address or create the conditions necessary for optimising learning and learning development within any specific project context – which is a general deficiency in current learning approaches in project management practice. In short, opportunistic responses are useful but should be embedded within a strategic and purposeful approach to learning. In the view of these participants, particularly in the early stages of this study, attending to issues in the organizational environment, seemed to take some priority over purposefully and systematically attending to the processes concerned with developing their learning relationships - despite the explicit project goal of redefining their relationships. Hence, despite these organizational environment conditions encouraging these project participants to personally and recurrently engage with each other, these organizational environment commitments actually helped limit the occasions for project participants' to attend to their learning relationship development processes and provided avenues or targets for individuals to more readily 'defensively deflect'.

Given those issues outlined above, the project team participants in this case took many project meeting sessions to progressively recognize, reflect upon and move steadily away from this avoidance approach towards constantly addressing aspects of their own learning relationships.

Preparedness to Explore One's Learning Relationships with Others Outside of the Existing Relationship Frameworks

This 'conditioner' of the 'learning relationship' element suggests a necessity for more aggressive activity in explorative learning of the relationships between people. Through undertaking such a process, higher levels of trust may develop between people that may consequently encourage more and different approaches to mentoring, coaching and general participation – which may ultimately enhance situated learning activity. This exploration of, and challenge to existing relational frameworks, was a strategy that the project team in this study very actively pursued, since they sought to develop their relationships to a new level of trust, openness and emotional engagement. Their actions mirror Argyris and Schön's (1978) Model II type approach to organizational learning, wherein, existing mental models and governing variables are challenged. In that process, double loop learning results from individuals confronting their basic assumptions behind their views of others (often involving difficult and sensitive matters) and inviting public confrontation and exploration of their assumptions (Argyris and Schön, 1978: 130-141 and, 60-65; Schön, 1987: 258-259).

During the study, when Ken, Ted and Anton were individually asked to comment on the challenges they faced in changing their traditional relationships, their responses were multifaceted. For example, Anton indicated that the traditional physical and socio-cultural demarcation between different battery operations presented a difficult relationship development challenge, but stated, *"Somehow we have to change that barrier so that we start to work across the batteries and I think that's what I'm trying to do with Ted … [] … I suppose some of the conversations that we have together in the project team is pushing us down a few different tracks, that is making us rethink perhaps our beliefs as to what relationships are possible."* Ken emphasized the 'internal' struggle he felt they all possessed about this relationship issue, by suggesting that, *"we are all struggling around what does this change really mean. We are all struggling to come up with non traditional, non hierarchical responses as to how we should work and learn together ... our task is to make these things explicit and build our relationships and understand what the relationships need to be and to manage the egos around it."* Ted articulated a list of issues which he considered were restraining people from changing their 'traditional' relationships. These involved: the uncertainty present in the organizational, business and project environments resulting in people persisting with the 'devil you know' syndrome; a lack of courage and knowledge within the participants to pursue change of this nature; long serving employees on the project team [most having served more than 15 years in this one organization] where their current relationships were forged by their past culture experiences, which were well known and understood, and; not clearly seeing 'what's in it for them' through their participation in the change process and questioning whether their efforts would be valued. At that time, Ted subsequently concluded that changes to their relationships were dependent upon the individuals being self motivated and committed enough to drive it.

Also, at the start of this project some learning relationships were considered more relevant than others. For example, during an interview Ken commented that, *"Our learning relationship barriers involve hierarchy. The guy who sees a problem is still not prepared to share it upwards. We need to learn from the guys doing the jobs, be prepared to listen to the guys and to seek out and value the comments when we get them, even though it may not be immediately valuable* [as Ken might perceive it].*"* This comment reflected the intertwining of perceived authority with the learning relationships that these participants had with other people, and implied that

their authority (or at least perceptions of it) had flavoured peoples' attitudes and approaches towards sharing information with them. Ted suggested that they (the project participants) *"… only value input from the right source. We need to seek out people throughout all the hierarchy, whether it comes from the right or wrong place. In our culture we look for the answers only in certain areas. Listening to all is the key to the* [learning] *system working."* Ted's comment indicates that some relationships were perceived by the project participants as more valuable for learning than others, and those 'others' seen as more obligatory – attracting less focus or just ignored. However, all these comments also reflect that these participants increasingly and genuinely acknowledged important socio-cultural influences on how they perceived and valued their relationships, and that they considered there were positive learning outcomes to be realized through them proactively altering those existing relationships.

Immersed in this complex socio-cultural milieu, Ken (for example) actively sought to reduce what were current barriers to learning in his relationships with other people external to the project team, and across the traditional work silos. This primarily involved him in informal activities consisting of conversations with people, seeking and offering advice and positing questions about operational and change process issues. Within that context, those actions effectively constituted new approaches to coaching and mentoring of section employees. Anton and Ted readily acknowledged their observations of Ken performing these many informal mentoring and coaching activities with section employees. Ken indicated that during those exchanges, he was trying to talk up the notion of the Cokemaking Leadership Team [the project team], since *"One of the characteristics about our traditional culture around here is a lack of trust and that extends very much to a lack of trust of what goes on behind closed doors or assumed closed doors."* In this dialogue Ken was suggesting that he was conscious of influencing perceptions of the Cokemaking Leadership Team in the rest of the organization, since he considered this cultural 'lack of trust' may have inhibited the development of the organization and of the project team activities. In performing these actions, he repeatedly confronted and challenged a governing value of cultural mistrust between different groups in the organization. He suggested his own extensive informal efforts (and those of his colleagues) in reducing the relationship barriers were quite significant given the cultural history of the site. As well as helping to build relationships between people across the organization, Ken's interventions also helped to progressively 'chip away' at the cultural 'authority' issues for learning imposed by his previous hierarchical position.

The following vignette provides an example of Ken, Ted and Anton's informal efforts in coaching and mentoring each other. This appeared to be radically different to how they would have traditionally mentored each other prior to the project team forming i.e. it would not necessarily have happened! It also illustrates them expressly grappling with their own relationship issues and those they have with other employees external to the immediate project team, but involved in the broader change process. These actions incidentally, were in accordance with their stated project goals of redefining their relationships and practicing new leadership skills.

> One morning at work, Anton sought Ken and Ted's advice on an important operational and relationship problem he was having with a number of key employees in his area of responsibility (i.e. the numbers 4, 5, and 6 coke batteries). This problem involved the employees' current work behaviours not being seen as aligning with the needs of the current or future operation, and Anton aggressively seeking to change those employees' work behaviours. Anton, Ken, and Ted talked expansively through what exactly were the issues that Anton needed to address and how he might keep attacking the assumptions that sat behind the employees' demonstrated behaviours. As a team, they appeared to both try to help solve the problem Anton presented, but also, to challenge and explore what were the critical underpinning aspects of Anton's relational conflict with the employee group – thereby not simply focus on the exhibited behaviours of the employees and presenting problem. Notably too, their dialogue included much about Anton's own behaviour with the group. After the event, Ted reflected positively on this mentoring episode, by stating, *"So that event was good as a joint learning experience … we actually sat down and said how do we actually break the psychological barrier exhibited in the issue and better understand how we reward people, and, we questioned how we get into peoples heads to better understand them. This activity was an attempt to draw upon our collective experiences and to learn from each other … It was a comforting thing for Anton to try, and for us to be the sounding boards."*

While at the time of this one particular event it may not have been readily apparent to the participants, through their actions on that occasion, they were also developing their ability in 'learning how to learn'. Through helping to reduce their fear of sharing information and their concerns with each other and also exposing and sharing their tacit knowledge, these types of occasions provided further opportunities for the participants to

jointly challenge, better understand and steadily build their own learning relationship frameworks. This example (amongst others) of project participants conducting an 'operational-focused' discussion first, which then led onto critical reflections about their learning behaviours, was a general circumstance shaped by a number of considerations pertaining to the situational context of the project case.

In addition to devising and embracing different approaches to mentoring and coaching each other, the demonstrable activities pursued by this project team in attempting to build their relationships, suggested that they progressively came to view their relationship problems as major learning opportunities - rather than viewing them as problems to be quickly isolated and solved, or bypassed and not discussed (Argyris, 1990: 43). As a brief example of treating a perceived relationship problem as a learning opportunity during this study, Ken reflected that, *"One of the things that can create learning barriers is where you get individuals not actively participating* [in team meetings] *... Whether they are taking it in and reflecting internally or whether they are just switched off and thinking about something else ... The internalising creates a barrier where the collective wisdom is not getting shared. Often guys who are sitting there internalising have got a good point of view, a valid point of view* [in his opinion]*, one that will carry a discussion somewhere else and to someplace valuable, and, they're not sharing it and the group is being denied some wisdom."* These comments may reflect a cognitive style issue, but also reflect that Ken perceived there were learning difficulties between project team members, which may be rooted in their relationships. That being, people did not seem to freely and actively participate in the meeting sessions. Rather than ignore or reject these 'disengagement' or 'non-participation' situations, Ken demonstrated his preparedness to challenge and change these situations by pursuing the other participants for their opinions and ideas. In doing so, by my observations of him across multiple events, he undertook many actions that frequently energized participants to interact more and through their new interactions (both verbal and reflective in character) they learnt and better contributed to the learning of the team.

In sum, through persistently exploring their relationships (irrespective of their cognitive style type) individuals in this team came to recognize their defensive patterns and progressively altered their perspectives and actions as to how they interacted and learnt together. Furthermore, since learning and building their relationships were established as core parts of the project team activity, the project team also increasingly demonstrated a genuine preparedness to explore new relationship possibilities. Their actions involved them in challenging existing and potential relationship frameworks, altering current mentoring and coaching activities and in viewing relationship problems as major opportunities for learning. Incidentally, as they explored these possibilities and reduced their defensive actions, the project participants learnt from each other and helped develop their ability in 'learning how to learn'.

CONCLUSION

This paper has presented an empirical insight into the social world of project management learning and an argument that within a project context, the 'learning relationships' between project team members constitute a powerful sociological influence on situated learning activity – and therefore require deliberate managerial attention. From this case study, two empirically derived conditioners of participants' 'learning relationships' were identified and elaborated upon. These involved, 'attitudes to public exposure and public scrutiny of personal matters' and, 'preparedness to explore one's learning relationships with others outside of the existing relationship frameworks and viewing relationship problems as major learning opportunities'. As illustrated in the case study examined and as difficult as it may be for a practitioner audience to engage with at a personal or professional level while undertaking a project, this paper also argues that the public exposition and communal reflection on a project team's 'learning relationships' is essential in aiding the development of strategies and actions to deal with the barriers within those relationships, and thereby promote situated learning in a project team. Taking such learning actions offers a practical (albeit potentially difficult) avenue to help 'practice' learning within a project – or in other words, to treat learning as a systematic project action. This paper may also serve as a starting point to conceptually focus the participants of project teams and researchers on the pragmatic and complex sociological issues involved in learning and knowledge management within this dynamic learning context.

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