Organizational Learning and Social Identity in a Context of Transformational Change: Towards an Enlarged Perspective of Situated Learning Theory

Wayne F. St-Amour
Lancaster University Management School
w.stamour@lancaster.ac.uk

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Introduction

Organizational learning is a priority for maintaining and increasing firm performance and competitiveness in today's rapidly changing business environment. Organizational learning makes adaptive processes possible because acquiring knowledge to interpret parameters of a change, converting knowledge into new action repertoires and creating new knowledge to inform adaptation practices, are fundamental features of change[1]. Consequently, management researchers and practitioners share an interest in factors that contribute towards the creation, transfer and application of knowledge in practice-based situated conditions (Nicolini et al., 2003; Argote, 1999). Learning in the context of change impacts organizational culture as actors negotiate different activities and find their way in new organizational circumstances.

Social and organizational identities are key elements of an organization's culture. Social identity is a dual conception, which is based on a mutually constitutive relationship between self and social group. Social identities develop through a process of learning and influence a person's understanding of what it means to be a member of a group. They are multiple, dynamic and rooted in sociopolitical contexts (Howard, 2000). Social identity spans a hierarchy that is founded on the extent to which actors identify themselves in relation to group membership (Tajfel and Turner, 1986).

Organizational identity is referred to as the character of an organization that is considered, central, distinctive and enduring (Albert and Whetten, 1985). Organizational identity is also profoundly linked to organizational culture because it is grounded in organizational symbols and local meanings, which serve as its 'internal symbolic context' (Hatch and Schultz, 1997:358).

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[1] Organizational learning is defined in this paper as a process which combines knowledge acquisition, knowledge conversion (dependent on transfer) and knowledge creation, which draws on situated learning theory (Bourdieu, 1977; Brown, Collins and Duguid, 1989; Brown and Duguid, 2001).

Members dynamically orient multiple social identities with the identity of their organization. Theorists have demonstrated that groups with strong organizational identification have greater intentions to stay with a firm, perform better, and are more cooperative (Ellemers et al, 1998; Jetten et al., 2002). Further, research on organizational mergers has shown that the success of a merger partly depends on employees letting go of their pre-merger organizational identity and learning the new post-merger identity (Terry et al., 1996). A central theme of this paper is the importance of social and organizational identity (SOI) tension and its attendant impact on organizational learning. SOI tension can arise when, as part of the firm's adaptation endeavors, managers seek to initiate organizational change that necessitates learning a new organizational identity. I refer to this new identity as an *intended* identity. Social identity theory postulates that when social and organizational identities are aligned, group actions are likely to be consistent with the achievement of organizational goals. Identity tension can result when as part of an organizational adaptation endeavor a group perceives that it is forced to adopt an intended identity and forsake its root social identity (Child and Rodrigues, 2003; Ellemers and Rink, 2005). As a result of this tension, work groups can adopt various strategies to resist learning new practices associated with the intended organizational identity that include withholding knowledge or refusing to participate in learning endeavors. For example, learning can be impeded when actors elect to withhold from transferring knowledge or engaging in cooperative processes to release 'know how' when an intended organization identity calls into question their existing social identity conception (Brown and Starkey, 2000; Child and Rodrigues, 2003). On the other hand, identity questions that test self-reference can trigger an exploration of underlying assumptions and scrutinization of conventions, thus stimulating critical reflexivity and learning processes (Corley and Gioia, 2003; Rothman and Friedman, 2003). Both situations are linked to social and organizational identity tension when new circumstances are prompted by organizational change. Consequently, tension between social and organizational identity has the potential to facilitate or act as an inhibiting factor for organizational learning in a context of change. It is not clear what it means for organizational learning when tension arises between a work group's social identity and an organization's intended identity. This paper discusses whether organizational learning is impeded or facilitated in situations of identity conflict, which leads to the central question of my research, "What impact does social and

organizational identity tension have on organizational learning in a context of change?"

Situated Learning and Change

Change is key to any learning ontology since human learning induces change in the social world, be it a change in knowledge, structure, attitude or identity of the learner (Sicilia and Lytras, 2005). Therefore, studying this question necessitates an examination of the social processes that inform an actor's learning. In this socio-cultural conception, change and learning are inextricable and change is linked to identity construction and transformation. Change is characteristic of the collective emergent action of communities that constitute an organization and not solely the combined knowledge of isolated individual learners. Here, knowledge is constructed as communities of practice engage in activity (Lave and Wenger, 1991). Thus, as Gherardi et al., (1998: 281) maintain, because '…new knowledge, both cultural and material is institutionalized in the community of practice…it counts as one of the most important mechanisms of organizational learning'. Rather than the polemic which affords privilege to either the individual's circumstance or the broad societal enterprise, this view argues that a change can be triggered by a wider political process but that change must be negotiated and acted upon at the level of the social world of practice (Mead, 1934; Bourdieu, 1990). Moreover, the same can be seen in reverse order when the output of practice based communities, which is sometimes radical, stimulate change at broader social levels (E.g. Alinsky, 1971).

However, situated learning theory pays little attention to the social identity of a practice or attendant influencing effects from significant reference group(s) or communities on a target community of practice's social identity. Instead, the situated learning literature focuses on the individual's identity as he or she becomes a full member of a community of practice (Lave and Wenger, 1991; Gherardi et al., 1998; Wenger, 1998). Moreover, the emphasis on the individual 'in community' excludes the important impact and attendant effects on a particular community from the constellation of communities and groups within the broader social system in which that community operates (Tajfel and Turner, 1986; Stets and Burke, 2000; Hogg, 2005).

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This view ignores the potential where, because of social and organizational identity tension, knowledge flows may be withheld. In addition to the relative characteristics of the knowledge itself - whether it is sticky, leaky, tacit or explicit (Brown and Duguid, 2002), this orientation gives equal attention to identification, which informs the socio-political aspects of knowledge creation and transfer. Power and conflict underpin the argument made by various authors that identity-based conflict can *impede* organizational learning (Brown and Starkey, 2000; Weick, 2001; Child and Rodrigues, 2003). Furthermore, situated learning theory, particularly in its early discussions, largely ignored power relations. Rather, it emphasizes the individual's journey which involves becoming a member of a community, 'becoming an insider' (Brown and Duguid, 1991: 48), 'thereby understanding its work and its talk from the inside' and where, 'knowledge traveling on the back of practice (was) is readily shared' (Brown and Duguid, 2002: 126). More recently, situated learning theory is characterized as interaction among community members where learning is an outcome of members engaged in practice and processes of ongoing relations who acquire and create new knowledge (Nicolini et al., 2003). A as a foundation concept of situated learning, assuming legitimate peripheral participation (Lave and Wenger, 1991) is truly enacted, learning is positioned as conflict-free and an ongoing outcome of practice relations. For example, Brown and Duguid (2002) reference Gate's (1995) study of a community of computing engineers where a member states that, 'There was amazingly little argument or fighting'. The authors suggest that in these communities of practice, '…people involved ignored divisions of rank' and shared, '…a common working identity' (Cited in Brown and Duguid, 2002: 127).

Social Identity Theory

Social identity theory (Tajfel and Turner, 1986) is composed of *categorization* or the way people come to understand groups by placing them into a labeled category, *identification* or our association with groups, often to sustain self-esteem, and *comparison* or the way we compare our groups with other groups. Members of practice-based communities have multiple social identities that are enacted on the basis of a hierarchy of contextual salience and commitment (Stryker and Burke, 2000). Identities that are highly salient engender the greatest commitment and can be the most difficult for a community to change, however, groups espouse an array of identities, as a means of social navigation (Goffman, 1959), and discriminate in

favour of the social category (social or organizational) that is most salient (Stets and Burke, 2000; Ervin and Stryker, 2001). None the less, identity transformation is not without tension. Research that draws on social identity theory shows that communities are motivated to generally perceive their group more positively than 'outgroups', particularly if they are performing well, such that their self-esteem is reinforced (Tajfel and Turner, 1979; Ellemers, Barreto and Spears, 1999).

Social Identity as Everyday Worklife

Social identity is a foundational aspect of human lived experience. Child and Rodrigues (2003: 536) suggest that social identities mediate logics of action that emanate, "…from what groups stand for in the eyes of the people who belong to them". Social identity is both personal and social. A social person's identity resides in the existential question of 'who am I', but social identity cannot be formed unless a person assesses the question of 'who am I' in relation to another. In order for social identity to be developed, both personal and social aspects must coexist. Social identity depends on this interplay between actors, first at a personal level and second, at the occupational level. People in organizational settings experience a sense of belonging when they share experiences and reinforce their individual identities in a group. A social person's identity and group identity coexist and create compatibility within an occupational group and at the same time differentiate that group from others. Social identity thus, can mediate collective activity when distributed actors must interact through structural and interpretive practices (Jarzabkowski, 2005). Social identity as a multiple, evolving construct is both mediated by change such as a new role or life change and also serves to mediate change. Social identities, as such, are reinforcing. Organizational identity includes distinctive, evolving and multiple identities that members consider representative of a firm's character at a certain point in time. It is the sense of affiliation we assume when we belong to an organized entity (Child and Rodrigues, 2003). When a person assumes the identity of a group he will work towards maintaining the identity of that group or community (Martin, 2002), which in turn influences sense of self. The authors contend that actors are likely to retain the identity of a group over an organizational identity, and thus refuse to participate in the knowledge sharing processes that are requisite for organizational learning.

The perspective adopted in this paper proposes that communities of practice do not operate in isolation from other communities or the broader organization of which they are a part. However, this notion differs from 'networks of practice' (Brown and Duguid, 2002: 141). While networks are important constitutions for sharing information, they are often dispersed collections of people and have more to do with occupational groups than communities where knowledge is created through situated practice. The concept of communities actively engaged with other communities conceives of organizations as 'communities of communities' (Brown and Duguid, 1991: 53). In this way, communities are co-located constitutions engaged in everyday situated practice, which taken together make up an organization. Further, as social constitutions, communities are not exempt from processes of power and control (Contu and Willmott, 2000; Swan et al., 2002). This conception argues in favour of a community of practice as a social collectivism, which makes meaning through action, and symbolic representations of the world through ongoing relations within and outside its boundaries (Brown and Duguid, 1991, 1998, 2002; Nicolini et al., 2003). Thus, both individual members and a collective sense of identity influence social identity for a community of practice. This perspective proposes that the social production of identity is as important as an actor's personal identification as he or she engages in practice, yet the social identity of the community of practice is largely absent from situated learning theory.

Research Context

The research settings are two 'high reliability organizations' (HROs), a British nuclear power station operator that I name GenerCo and a Canadian electricity system operator, I refer to as PowerCo. HROs typify an organization where even a minor error in process poses risks to members and to the safety of the public (Roberts, 1990). This condition of HRO operation counts on tightly coupled interdependent group work in critical operating areas, which promotes highly salient group identity. HRO members I studied have tight alignment between their social and organizational identity prior to organizational restructuring, however as a result of the change, members experienced tension between their current social identity and the intended organizational identity. My focus is on intra-organizational communities of practice clustered into groups. I study three groups, administrative, professional-technical and management in each company, but for the sake of brevity, I concentrate on the

professional-technical (P-T) groups in the study organizations. Each group is made up from various practice-based communities, for example, the professional-technical group in GenerCo is made up of control room operators, operations technicians, maintenance technicians and fuelling personnel as communities of practice.

Identity alignment and its attendant relationship with organizational learning in a context of change is important both for promoting organizational learning to enable change and, pragmatically, to ensure safe and reliable operations in high hazard settings while undergoing change. Issues in relation to learning, identity and change are magnified in HRO's since learning in these settings by trial and experimentation are not viable options (Weick, 2002). With respect to change, high reliability environments necessitate a balance of old and new practices and processes in order to mitigate against operational risks. Both HROs attempt to manage processes of change as adaptive measures in response to environmental alterations caused by deregulation, but each company employs a different approach to produce the organizational learning necessary to achieve its desired change. The contrasting approaches to organizational change enable an investigation of the implications for learning in different situations of social and organizational identity conflict.

Organizational Profiles

GenerCo

GenerCo was formed as part of the UK electricity industry privatization in the 1990s. Its principal activities are the generation, sale and trading of electricity. Prior to its formation, GenerCo operated as a cost of service utility. GenerCo developed from a centralized organization that operated all electricity generation and transmission as a vertically integrated statutory monopoly. The company owns and operates various nuclear power stations in the UK. My study focuses on two adjacent nuclear power stations that share site infrastructure but largely operate as independent facilities. I name the stations, Station Coast and Station Peak respectively. The stations are located about 30 metres from each other and share the same site. The drop in wholesale price and multiple, concurrent issues such as aging plant, public acceptance of nuclear power generation and a changing energy policy, have combined to create some uncertainty about the viability of the industry (Helm, 2003). Under the old regime, nuclear generation was assured a place in the dispatch order to supply

power, whereas the privatization arrangement requires that nuclear operators must compete with other forms of generation.

These changes posed difficulties for nuclear power's cost competitiveness. GenerCo's management team identified the need for culture change as the main solution to remedy the company's problems by instituting an organization-wide performance improvement initiative, which I refer to as the 'Performance Improvement Initiative' (PII). A main feature of the initiative is its 'fleet-wide' approach. The organization is focused on achieving human performance efficiencies by consolidating best practices from one power station and instituting those practices in all of the stations in the fleet. Organizational documents point out that the endeavor to combine work practices as a central tenet of the culture change aims to focus on cost savings and improving human performance so that GenerCo can become more efficient. The PII initiative's fleet-wide approach requires the transfer, conversion and creation of knowledge.

PowerCo

The passing of a legislative Act in the Canadian province where PowerCo is located signaled the shift to competition in the electric industry in that province and created PowerCo as the organization responsible for operating the competitive market for generation and the safe, reliable operation of the provincial electric grid. Essentially, PowerCo operates the 'stock market' for buying and selling electricity at the wholesale level in the province. As well, the company is responsible for managing the electric grid, which carries electricity between provinces and is interconnected with the United States. The electric system is comprised of over 20,000 kilometres of transmission lines and over 400 substations. Control and coordination of the provincial electric power grid is founded on balancing electricity supply with the demand on the system 24 hours a day, year-round. Control room operators may dispatch power plants on or off the system and take steps to manage the 'flow' of electricity as part of their activities to achieve this balance. When deregulation came into effect, two main organizations were formed. PowerCo was created to operate the competitive wholesale market and the real-time generation dispatch in a Canadian province. A second organization, given the pseudonym TransmiCo, was also created. TransmiCo is responsible for the overall coordination

of the transmission (electricity transportation) system. TransmiCo's business ensures new lines are constructed and new commercial generators are interconnected onto the grid.

Methodology

The study considers the implications for communities' of practice situated learning in conditions of social and organizational identity tension sparked by organizational change. To examine these issues, I employ a symbolic interactionist approach, which is known as both a theoretical paradigm and research method (Blumer, 1969; Prasad, 1993; Charon, 2001). As a theoretical paradigm in the social sciences, symbolic interactionism is concerned with emphasizing meaning in social situations. Symbolic interactionism posits that people have images of themselves, which are shaped (and shape) meaningful social interaction. These images influence how meaning is assigned and how people engage in action though an ongoing process of definition.   Symbolic interactionism departs from individual learning theory, which situates and focuses learning as a cognitive process. Instead, symbolic interactionism facilitates an understanding of group social life as people define meaning and achieve symbolic representations of identity by doing things together. Symbolic interactionism (SI) is considered a research method because participant observation and interviewing are considered as essential modes of data gathering.

As a method, interactionism transcends the polemic of studying solely 'individual' or 'macro sociological process' through its focus on a social self, which mediates both worlds. SI cannot theoretically or methodologically divide a social person from their group (Charon, 2001). Further, to achieve a deep understanding of the social process of interest, I employ the constant comparison approach informed by grounded theory (Strauss and Corbin, 1998) with symbolic interactionism's participant observation, and interviews. I also studied company documents. Altogether I interviewed 59 employees from both GenerCo and PowerCo. I observed operating shifts in control rooms, during maintenance outages and communities of practice everyday work activities. When PowerCo merged with TransmiCo my research included employees from both organizations. I analyzed annual reports, operating procedures, customer information brochures, community environmental and shareholder financial reports from both organizations and studied the key messages

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contained in the various documents in relation to learning, mentions of intended identity and steps each organization took to manage its change process. Analyzing these documents enabled me to gain an understanding of the organizational discourse in the form of company formal communication. The following section considers the subject of focus by examining two organizational cases and in particular, two transformational change episodes – GenerCo's adoption of fleet wide practices with maintenance outages, and stemming from its merger, PowerCo's transmission line scheduling process.

GenerCo Organizational Identity Formation

The Institute of Nuclear Power Operations (INPO) [2] is the United States centre for the World Association of Nuclear Operators (WANO). WANO was instituted after the 1986 explosion at the Chernobyl nuclear power plant. WANO is international in scope and like INPO, its member organizations share operating experience information by collecting, trending and disseminating nuclear plant performance data in key areas. Organizations like INPO and WANO not only provide industry performance statistics, in line with institutional theory (DiMaggio and Powell, 1983) according to respondents, they also serve as reinforcing mechanisms for organizational identity within the nuclear industry. For example, Ivan, operations manager at GenerCo's Station Coast, uses INPO performance as a way to classify performance, status and standing. He describes this without having to name the company he refers to.

> *…we had a guy who is an ops manager who came from an American station, I'll not tell you the station but it's an INPO One station and has been for about the last seven years. So pretty good…pretty good station. [Interview 37G-S10]*

Organizational identity in the industry is also influenced by being a 'high reliability' organization (HRO) and in particular in the nuclear industry. For example, Station Coast director, Donald says:

> *Staff identify with site more than with company in the order of first their shift and operating area then the station and last, the company. Also more identification and connection with the nuclear industry [Interview 27G-S2]*

Further, GenerCo Station Coast control room operator and outage coordinator Michael, puts it this way:

> *I have…stronger allegiance to and a sense of responsibility being in the nuclear industry and we tend to monitor what goes on. [Interview 58G-S4]*

Pre-Change SOI Alignment

Professional-Technical (P-T) community members refer to their social identity as linked with 'keeping the lights on' (KTLO). P-T staff reference their job in producing electricity as a 'mission' to denote the sense of importance they place on the role electricity plays in peoples' lives. Technical specialist Kirk, who has worked for over 25 years, mostly as a GenerCo maintenance technician explains that:

> *…there is a huge amount of pride within the organisation. I like most of the staff appreciate that we provide a service in terms of electricity to the people of the UK. For myself, "keeping the lights on" is exactly what we try to do. So "keeping the lights on" is what we do, it's our job. [Interview 51G-S1]*

Maintenance Outage Process and Intended Organizational Identity

Nuclear power station maintenance outage schedules are complex and multifaceted. They first rely on the amount of work that is planned – the things that must be done in order to maintain regulated operating standards. Second, the schedule must anticipate emergent work. Electric generating units, once opened, may reveal problems that can have significant impact on the schedule. This is known as managing emergent work. A careful balance must be achieved between taking on necessary emergent work at the risk of postponing planned work until the next outage period (Bourrier, 1996).

In the following account, Craig explains that outages are a careful blend of performing work on schedule, leaving sufficient slack in the system to account for emergent work and doing every task safely. During an interview at the outage centre, he recounts GenerCo's past situation this way:

> *Before … in the bad old days should I say (laughs), I mean an outage was 20 weeks long - 12 weeks anyway- the average outage was at least 12 to 15 weeks long. … So it wasn't just about the planning, it was about getting the culture right, getting the focus of the outage right and then getting the plan right. [Interview 33G-S2]*

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[2] Industry Association data (INPO and WANO) from World Nuclear Association Web site http://www.world-nuclear.org.

GenerCo's Station Peak outage manager, Craig has the task to oversee the new outage process, deliver it within the schedule and control for accidents. He has developed a new 'outage culture' and this project operationalizes his new approach. This particular outage is planed for 38 days and involves extensive turbine and generator overhaul work. When the outage concluded, Craig and his associate Dan, estimate that 1,000 workers implemented over 10,000 tasks over 40 days without a lost time accident *[Interview 33G-S6; Interview 59G-S26]*. These figures compare to the past performance where Dan and Craig suggest, outages lasted on average between 12 – 15 weeks and sometimes as much as 20 weeks to about 6 weeks.

Craig suggests that to make these changes in practice, trust between GenerCo employees and contractors is essential. He says:

> *We're in for the long game with these guys - you know with the main mechanical services and welding contractor, [name], we're in a 7-year-plus partnership with them. And we've got an open-book arrangement with them. So they're making a known amount profit. It's open. And in most of our contracts, we're in long-term arrangements. [Interview 33G-S40]*

According to Dan, a trust-based relationship with contractors is important to the smooth running of an outage. He says:

> *…we maintain somewhere around one thousand valves on an outage and the valve contractor which is (name) that we permanently pay for a (name) supervisor to sort of live in the outage office and he's part of the team, year in-year out, 365 days a year, lives here with us. And he looks after all the valves and the spares…That has already paid dividends. [Interview 59G-S26]*

Child and Rodrigues (2003) describe reflexivity as a key aspect of social identity formation and reinforcement. Craig describes the process for reflecting on action between staff and contractors this way:

> *We do post-outage reviews in each area. And from that we'll come up with a list of things that we want to do differently - to improve. So we'll build that into an action plan for the next outage. Monday, we start daily meetings at half past 9 and that looks at what's happened in the last 24 hours - were are we going in the next 24 hours. Then we have a review meeting at half past 4. We'll review the actions at 'evening prayers' at half past four as we call it. [Interview 33G-S24]*

SOI Tension and 'Fleet-Wide' Approach

Although the Station Peak outage process seems cost efficient, operated on schedule and recorded a zero lost time accident rate, the process is not universal throughout GenerCo's fleet of power stations. This contradicts a central objective of the PII culture change initiative that states, "…share knowledge and experience across the fleet" as a main tenet of the 'fleet wide approach'. *[Co-Doc 5G-S2]*. Some members express that the organizational changes have triggered tension between the strong current social identity and the intended organizational identity, which stresses the 'common organisation structure across the station fleet', as well as 'Increased resource sharing to share knowledge and experience across the fleet' *[Co-doc 3G-S1,3,4,5,6]*. For example, GenerCo communication specialist Mitchell remarked that the PII was:

> *…about throwing the baby out with the bath water really. Maybe we should have combined PII and some of the good practices from before. [Interview 54G-S8]*

> Further, Michael, a GenerCo system control room operator and P-T group member suggested:
> *I really think this (names vision) bit – is a thin veneer. You look beneath it – it's a can of worms. There is a real can of worms there. [Interview 36G-S54]*

Respondents are mixed in their assessment of the degree of adoption of the Station Peak process, however, they consistently contend that the process is not universally accepted in its entirety. They suggest various reasons for the different approaches to maintenance outages. These include different technology and distinct social and organizational identities. Dan, for example, suggests that the Station Peak process be being adopted more at other stations. *[Interview 59G-S20]*. Dan points out that the stations are different in design and this is the reason for the mixed set of processes over the 'fleet-wide' approach. Dan also acknowledges that:

> *…you've got to imagine that there are sort of, eight different outage managers sitting around a table all disagreeing on what the best process is and all thinking they have the best process and they couldn't possibly change but through sort of consultation and people willing to be flexible and writing the process that doesn't tie them down too hard [Interview 59G-S20]*

Craig, Station Peak outage manager describes a phenomenon at GenerCo he called NIHI (phonetically as 'knee-high') or 'not-invented-here-issue'. He suggested

that NIHI refers to an idea that knowledge from outside local sources is of less or little value when compared to locally generated knowledge. He describes the phenomenon as follows:

> *So getting rid of the 'not-invented-here' syndrome. And trying to agree on the outage process. Now, I've got to say there's a bit of a split in the company. And you've [names other power stations in the fleet] very much agree on the outage process that we run here. And we're almost all of us, aligned to it. You've then got [names station in the fleet], and they've got themselves into a bit of a mindset. That it's all about minute-by-minute planning. And you've got a little bit of a split in the company that they're going to take us one way, but fundamentally, we're all trying to do the same thing. [Interview 33G-S28]*

Dixon (2000) suggests that cultural forces that work to impede learning, knowledge transfer and translation underpin NIHI, known more conventionally in management literature as 'not-invented-here-syndrome'. Craig offers a view of why successful outage practices are not accepted by other stations in the following way:

> *I think they've just been sold this concept - the successful outage is about absolute planning. That the only way you'll get success is the plan. And I'm saying it's not. That's one part of a successful outage. Getting the right safety culture and quality culture and the 'big picture' is probably more important than trying to plan it by the minute. [Interview 33G-S32]*

Perhaps most important, the crucial trust-based relationship with contractors poses problems with adopting new practices for the communities in Station Coast, which generates identity tension. Engaging in these relations requires identity negotiations (Howard, 2000), which may present issues with self-presentation or impression management (Goffman, 1959), especially when ties to others are less salient than with relevant practice-based communities. When asked about the results of a recent outage (June, 2005) on GenerCo's Station Coast, located across the road from Station Peak, outage coordinator, Michael commented, "Overrun 31 days…problems with (boiler) seals" *[Interview 58G-S2]*. Further, on the idea of transferring practice-based tacit knowledge to Station Coast, best practices and using contractors as partners as Craig indicates is done at Station Peak, Michael remarks:

> *No. They can't. If they [practices] could be easily transferred, we'd be bringing more staff to bolster up the outage from another site. But there is so much site-specific knowledge required to actually run these places that I suspect if it could have been done, it would have been done by now. And we have contract planners come in for the beginning of the stat (statutory) outages …and it takes a lot of time and effort getting them up to speed. To the point where we said…we recognize with this outage, well, "We won't bother*

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in future". Uh...ideally there should be a set way of running an outage but there isn't. [Interview 58G-S12]

Other respondents, who perform roles that are separate from the outage process, also describe issues with the 'fleet-wide' concept that is a central feature of the PII culture change initiative. For example, communication specialist Margaret explains that with the strong identification at each station, adopting practices from another station, poses issues. She observes that between Station Coast and Peak:

The cultures are completely different. And there's rivalry there. And I think there's rivalry anyway, between many of the stations. [Interview 35G-S10]

Station Coast director, Donald says:

Station Coast and Station Peak have different cultures. Station Peak is considered the spoiled younger sister by Station Coast people. And Station Coast staff think Station Peak as the first born and gets all the attention [Station Coast was the first commissioned of the two generating plants]. It's like sibling jealously. People talked about a Station Peak takeover when I came over from Station Peak to become station director at Station Coast. There was a lot of, "That's not how you do it here at Station Coast" [when new processes were trying to be introduced]. At the same time, it's getting better. Now we're operating with quite a few shared services. People talk about their opposite number. It's like sparring. [Interview 27G-S28]

Finally, Station Coast maintenance leader joked that it was questionable as to whether or not Station Peak even existed even though the stations are located perhaps only 30 metres from each other. He said:

Is there a second plant here? (laughs) Sister plant for Station Peak is [name] and many will more readily travel 80 miles to [name] than walk across the street and see someone at Station Coast. Some think Station Peak picked all the best people and Station Coast has all the old dinosaurs. [Interview28G-S10].

PowerCo

Pre Change SOI Alignment

The provincial Department of Energy (DOE) policy on electricity where PowerCo operates states, *"For electricity, this vision includes creating the right conditions to facilitate an electric industry which is competitive, reliable and sustainable"*. The provincial regulator's mission for electricity includes, "…*ensure that customers receive safe and reliable service*". These sentiments express an industry vision which influences certain aspects of institutional theory, and the

strength of ties within industry relationships (DiMaggio and Powell, 1983; also see Granovetter, 1985), PowerCo's organizational identity is influenced and in turn influences the provincial industry.

PowerCo's director of human resources depicts organizational identity as, "…there's keeping the system going, which (is about) keep the lights on", *[Interview 9P-S52]*, "… you know, make sure supply and demand are met. You know what I mean?" *[Interview 9P-S56]*.

Some P-T function employees use the every-day language of reliability to characterize their social identity. In this context, service as a commitment is referred to as 'keeping the lights on' (KTLO).

In relation to service commitment, PowerCo control room operator Norbert comments:

> *Like, the guys here have a really strong commitment to it…it's providing the service. And I would say that, that's still here with all the guys... It's more than a job... I guess I can sum it up in a few words…it's what I do. I mean that sounds too simple but [keeping the lights on] that's what I do. [Interview 18P-S10]*

Additionally, technical project specialist Victor said:

> *…electricity is economic development and also providing on a personal level…for the person at home some uh…personal comfort. It's light, heat...warmth... for 'Mrs. Jones'… that's why I think keeping the lights on has a different meaning …it's lifestyle and... socially it's about people's lives. [Interview 53P-S12]*

Other P-T function workers who share the KTLO identification relate the tacit nature of learning identity. Norbert, a PowerCo control room operator remarked:

> *The system control room function, it's almost more of an art than a science sometimes. It's funny but you get a feeling that something isn't right and how do you qualify what that is? I remember one time…I was sitting at the grid desk and I had a feeling that things weren't quite right. And the superintendent comes along and he says, "What are you doing?" And I says, "I'm getting ready", I go, "I'm getting ready". "For what?" And he no sooner said 'for what', then we had a line trip. And I went over, closed the breaker and said, "For that". [Interview 18P-S52]*

Intended Organizational Identity and 'Transmission Scheduling'

When PowerCo was established it was responsible for ensuring adequate supply for the system from 'real-time' up to seven days. TransmiCo's responsibility to ensure system reliability spanned from seven days up to 20 years. According to respondents, although in concept the notion that it seems reasonable for one organization to be responsible for the 'here and now' reliability of power supply and another for future needs, in practice, issues at the seven-day overlap period led to coordination problems. Further, TransmiCo generated a seven-day operational schedule that PowerCo used to ensure electricity supplies would be adequate for the period. This meant that if PowerCo operated in strict accordance with the plan, the power grid would need to remain stable in exact accordance with TransmiCo's plan - unchanged during the seven-day period. PowerCo control room operator Norbert suggested that:

> *...we used to run into problems all the time with who was going to do what and when. Especially at the times for generation planning and transmission planning coordination. ...Their [TransmiCo's] homework wasn't done. [Interview 52P-S2]*

Some TransmiCo members, however, expressed concern over the criticism for the confusion over responsibilities. For example TransmiCo system operation engineer, Frank says:

> *...some issues staff needed to get past with respect to earlier interactions between the TransmiCo and PowerCo which carried a level of animosity between certain individuals...I know personally, as one who's probably been around the longest I'm usually questioned on some of the history and at times feel I'm defending some of those actions. [Interview 48P-S1,3]*

Kirk, PowerCo financial officer, expressed his concerns as:

> *I'm not so sure ...TransmiCo...ever did a good job in...respect (customer service)...the culture there really was a utility culture, like...where, 'We know what's best!' [Interview 10P-S10]*

Another source of tension surfaced as members experienced uncertainty in their social identities as a result of the impending merger (Ullrich et al., 2005). Some employees indicated that their jobs could be in jeopardy. In particular, among people who performed like-activities in areas such as human resources, finance and customer service. TransmiCo engineer Frank commented:

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Challenges were more so perhaps with respect to dealing with common type functions, such as HR, Finance and IT related functions; clearly here you could eliminate duplication ...the engineering functions or technical areas were less of an issue given that the TransmiCo and PowerCo had some different roles in each case...duplication was not an issue. [Interview 48P-S1]

A joint company employee survey indicated that for TransmiCo staff, *'several felt it was actually a takeover not a merger,' [CoDoc P9-S96].*

Identity-based Tensions and the Merger Process
The merger approach involved three key elements that included *[CoDoc P10-12]*:

▪ engage people involved in a practice from each organization to develop the integrated practice
▪ ensure all employees in both organizations were enabled to voice their input into how the organizational practices would unfold and evolve
▪ take actions as quickly as reasonably possible to minimize uncertainty

A company-wide communications plan was also created to support and coincide with the merger process. The plan was formulated on the main idea that teams of people representing each main function in both organizations would come together and 'deconstruct each function, identify opportunities for integration in the short and long-term, identify barriers and issues with carrying out the work or integrating certain functions and finally, identify functions that were necessary to the new organization but missing' *[CoDoc P10-S14, 16].* Prior to doing this work, functional team members were required to seek out employee input, enhance and test their early ideas about possible ways of organizing functions. These individuals were also asked to update staff as much as possible and thus served also as 'a source of information' to supplement formal communications and weekly update meetings with supervisors *[CoDoc P10-S14].* In total, 11 'functional teams' teams were established with 32 members actively engage in specific practices. Each team was comprised of joint representation from PowerCo and TransmiCo. The teams were supported with resources as required to develop their plans on how the new merged organization should look and work, how practices should be enhanced in the short and longer term and what work could be considered redundant.

From among the function teams, 'outage planning' emerged as a contentious area of practice for both PowerCo and TransmiCo staff. Therefore, outage planning

represents an appropriate context of conflict and SOI discontinuity (Giddens, 1991) to investigate implications for learning the intended organizational identity. As seen from the interview data presented earlier, respondents from both organizations lay a degree of blame for the overlap and coordination problems, at least in some part, on the 'other' organization. Learning new combined practices necessary for the merged organization will therefore need to occur in an environment of conflicting interpretations of past actions and identity-based tension. Examples of this tension include uncertainty over: 'who was going to do what and when… Their [TransmiCo's] homework wasn't done.' *[Interview 52P-S2]*; 'Once they gave the information we had to make sure things were consistent…lots of checks and balances…otherwise we could get caught short just at the time of system peak demand. So it was a very inefficient way of doing business.' *[Interview 53P-S2]*; '…earlier interactions between the TransmiCo and PowerCo which carried a level of animosity between certain individuals' *[Interview 48P-S1,3]*. The 'before merger' system planning process began by TransmiCo providing PowerCo with a seven-day 'ahead' schedule of the provincial electricity requirement. The schedule contained provisions for which transmission lines would be out of service during the seven-day period. PowerCo would use this schedule to plan how it would ensure electricity supply for the upcoming seven days. One respondent suggests that in the same way as a bridge is necessary to connect roadways, coordination is important on the electricity grid *[Interview 57P-S2]*. Having sufficient generation to supply the demand is of no value if the necessary transmission line to transfer the energy is out of service for maintenance. With PowerCo responsible for coordinating the timing of generation outages, and TransmiCo the transmission line outages, coordination problems occurred. PowerCo technical specialist, Victor puts the problem this way:

> *It was quite different between the groups. TransmiCo used to give us a [operations] plan…uhh…7 days in advance. And we would work with the wire owners (transmission facility owners) to make sure we had the necessary generation and transmission to meet the needs of the system. It was not a very good arrangement. It was very inefficient… things change on a (electric) system over 7 days. Once they gave the information we had to make sure things were consistent…lots of checks and balances…otherwise we could get caught short just at the time of system peak demand. So it was a very inefficient way of doing business. [Interview 53P-S2]*

Although employees from both organizations expressed views that operational planning was a significant problem area, members from both organizations developed

a plan that detailed how the problems would be tackled. In response to his views on the results once the plan was implemented, PowerCo technical specialist Victor commented:

> *…the operations coordination became clear. We worked together. Instead of people hanging on to the old ways, now just one party did that planning. So the coordination happened more effectively. And it worked very well…We were unsure at first but we realized after our many discussions in the early days of the integration that we're after the same thing. The discussions made it like setting up a family business. We picked up on what the other guy knows…uh…identified the conflicts with the priority…it was not to be hung up on the old organization's way of planning and coordinating. We invented a new way of doing things…uh…together. [Interview 50P-S4, 6]*

Control room operator Norbert sees the change this way:

> *we get together on in-depth studies, that's a big change and it comes from the will to work together. Plus we've had upgrades on two key lines one in the north and one in the south. These kinds of generation and transmission planning and coordination activities ah…would have been much more difficult in the past. [Interview 52P-S2]*

Frank, one of TransmiCo's operations engineers was more tentative about the new situation and its new 'combined practice' identity. He said, 'At times the ongoing challenge remains in dealing with events which happened previously in the old organizations', *[Interview 48P-S1], but* 'Staff were engaged in the process', *[Interview 48P-S2].* In relation to the knowledge sharing process, TransmiCo project engineer Richard remarked that, '… issues raised were well explained and there was a lot of open discussion.' *[CoDoc 5P-S15].*

Moving beyond the system planning process, other organizational members viewed the merger and learning the intended identity of the merged organization in various ways. For example, TransmiCo customer service representative Dick, seems tentative about the new combined identity. He says*, "…words are superficial, it takes time for actions to reveal the true leadership values, intentions, etceteras. So things have gone slowly and this is not surprising", [Interview 47P-S2].*

PowerCo communication specialist Lisa, suggests:

> *…there are definitely three types of people in the company now. There are the people who after the merger still consider themselves an old PowerCo or an old TransmiCo [person]… and they will always speak that way, no matter*

what happens. You've got employees I would say, like me, who I don't think...I think of myself as a [merged company name] employee. You know, we've come together. I like the new company. It's a good place. And then you've got the new people who don't know the history. And walk in with fresh attitudes and don't have any of the old baggage. So you've got those three different types of people working here at the moment. [Interview 39P-S80].

Finally, in an area related to operations planning, PowerCo technical specialist Victor said:

One of the ...big change ... was ... the TransmiCo and PowerCo [policies/procedures] were merged into one set of Operating Polices and Procedures commonly known as the OPP. ...a very positive change. ...people uh...more focused on the rest of the concerns how the big picture would work...and they did that together. They sat back and worked things out that was a big change from the tentative nature of the past where everybody was looking over their shoulder...uh...worried about the other guy's stuff and not talking enough. [Interview 53P-S6]

GenerCo and PowerCo SOI Similarities and Differences

Various patterns and expressions of similarities in relation to organizational identities emerge from the data. For instance, each management group 'measures' their organization (and organizational identity) against the performance and standards of other firms and agencies in their industry. Further, both exhibit high levels of social identity salience or strength evident in the expressions of the P-T groups for maintaining reliable operations or the KTLO identity. In the pre-change organizations SOI was aligned, however, the P-T groups suggest that their highly salient social identity is now threatened by transformational organizational changes. In GenerCo, members cite the introduction of fleet-wide practices and in PowerCo the threat to social identity stems from the need to adopt new practices to institutionalize a joint transmission scheduling process as part of its intended organizational identity. However, a significant difference between GenerCo and PowerCo is the way each company dealt with the need to adapt. The approach to instituting fleet-wide practices GenerCo adopted was significantly different from the organizational change approach to combine business practices in PowerCo's merger. Where GenerCo instituted a top-down process, PowerCo managers also took steps to shift the way people do things by introducing function teams as a way of introducing some degree of control and self-determination, identity negotiation, and continuity between the intended organizational identity with root social identity (Strauss, 1978; Ellemers and Rink,

2005; Ullrich et al., 2005). The PowerCo change process offered sufficient space and support for members to co-invent a joint social identity based on previous identities in relation to the intended organizational identity.

Collections of communities of practice in the two HROs experienced tension between their current social identity and the organizational intended identity, which, as part of firm level adaptation required learning a new set of work practices. The groups in each firm exhibited similar high levels of social identity salience, commitment and reinforcement prior to organizational restructuring. However, the change posed a threat to their current social identities. Social identity theory (Tajfel and Turner, 1986; Stets and Burke, 2000) maintains that in these circumstances both GenerCo and PowerCo groups would invoke their current social identity and thus refrain from learning new practices associated with the intended organizational identity very deeply. For example, in GenerCo, both communities perform outage processes. The Station Peak process is documented to show significant improvement from past performance. When the Station Coast maintenance outage community compared themselves to Station Peak in light of adopting the new practices, Station Coast refrained from taking on Station Peak's new practices. Because of identity tension, knowledge that could have flowed between the communities was impeded and thus, learning the new practices became compromised.

In contrast, a process of change that enabled identity continuity through negotiation is seen when the PowerCo P-T group engaged with TransmiCo group. The process promoted collective learning for the outage planning practices in spite of the presence of identity tension and highly salient social identities. Further, the notion that conflict on its own facilitates or impedes learning is shown as insufficient because while members in each company experienced identity-based conflict, in PowerCo learning was facilitated, but in GenerCo learning new practices necessary to realize the intended organizational identity was impeded. Consequently, in relation to the impact of social and organizational identity tension on organizational learning in a context of change the study shows that rather than learning being impeded *or* facilitated learning can be *both* impeded *and* facilitated. A different view from the polemic is afforded because the present study shows that both dominant academic views concerning the impact of identity tension on organizational learning are

partially accurate – organizational learning can be impeded *and* facilitated in situations of identity-based tension.

PowerCo's process of change created space for identity negotiation, which bridged the 'root' identity with a new intended organizational identity. In this way rather than disposing of the previous identity, a new one was in effect, grafted together from both previous social and organizational identities affording a degree of identity continuity (Neitz, 1990; Rousseau, 1998). This process is seen therefore to hold important implications for learning and change. Identities are experienced more as a dynamic and evolving whereby as members change practice they become new identities (Wenger, 1998; 2003). Seen this way, identities do not die but they become subsumed into a larger ongoing project of selfhood or group confederacy (Neitz, 1990; Ullrich et al., 2005).

Further, although each organization fits the defining characteristics of 'high reliability' this research illustrates levels of distinctions within the classification. The research demonstrates that firms that fall into the high reliability industry type may not be the same in terms of public safety risk or potential impact from operating errors or system failures. Although PowerCo and GenerCo are both HROs, high salience for an organizational identity that is steeped in no tolerance for the unplanned or unstructured, such as GenerCo's nuclear station environment, suggests difficulties in adopting learning processes that depend on practice-level variance such as negotiation or collectivism.

Discussion

Situated learning deals with change in communities of practice dominantly at the incremental level (Cook and Yanow, 1993; Gherardi et al., 1998). However, consistent with Engestrom (1991, 2001) and Newman and Nollen, (1998), this research shows how communities cannot always undergo slow, incremental evolution in practice but must sometimes radically transform. This depiction of learning contrasts that of Gherardi et al., (1998) who maintain that communities learn solely in incremental ways. Engestrom argues that 'transformative learning' (cited in Guile and Young, 2001: 68), depends on a broader view over and above the here and now, quick fixes of a change. This view of learning is founded on reflexivity as necessary

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to enable new possibilities. This perspective argues that transformational change in a community of practice depends on importing and reconceptualizing concepts and ideas from both inside *and outside* the community.

Rather than the dominant 'within-community' emphasis found in situated learning theory, this research proposes a view of learning where a community's identity transformation is more easily facilitated if it adopts both a practice-based *and* an outward looking perspective. This pluralist perspective is achieved when a community is open to identity transformation by engaging with the constellation of communities that make up an organization. This concept seems particularly relevant in conditions of uncertainty brought on by change since this view links the aspect of situated learning that constructs continuity with the past and the co-invention of possible futures. Moreover, the orientation drawn from this research views psychological safety (Edmondson, 1999; Child and Rodrigues, 2003) as an important additional mediating factor of this mode of community learning. Psychological safety is embedded within a process of change that affords identity continuity and transformation through negotiation.

The findings from this research support a theory of learning, which is founded on the notion that in order to produce change, a change in the context of a current social identity is essential. This view holds that organizational change is a process of changing how a firm learns. It presents a case for balance between social and organizational intended identity since negotiation processes that underpin the testing of assumptions and questioning taken-for-granted processes, seek to bridge old and new practices (Senge, 1990; Argyris, 1999). A top-down approach, such as GenerCo's, is shown to galvanize group social identification, which could influence members to refrain from transferring knowledge or participating in organizational learning processes with its wider constellation of communities.

Enlarging Situated Learning Theory

The present research provides empirical evidence to support the argument made by some educational theorists, (Barab et al., 1998; Barab and Duffy, 2000:4) that a broader view of 'situatedness and interaction' is needed, which extends the current situated learning theory (Lave and Wenger, 1991). Lave and Wenger (1991)

emphasize the personal identity forming aspects of a newcomer as they engage in practice. However, situated learning theory largely refrains from discussing the social identity *of the practice*. In the current view of legitimate peripheral participation, legitimacy is concerned with *access* to practice. The current view emphasizes the personal identity of the newcomer to a practice and pays little attention to the identity of the practice in relation to influencing effects from the broader social system in which the community is active. Periphery denotes a 'path' to practice (Gherardi et al., 1998) as a newcomer moves from the outside boundary into the core of practice through a social process of engagement (Lave and Wenger, 1991; Gherardi et al., 1998: 279). The present research shows that in the GenerCo case, although members had adequate access to more experienced members, and the correct path trajectory was available, knowledge flows were withheld and learning was impeded. Thus, situated learning in contexts of transformational change can be inhibited despite the presence of legitimate peripheral participation.

A more pluralist conception of a community's identity, founded on social identity theory, takes into account the influence of other social groups and communities within the organizational setting in which the community of practice is active. This research provides the empirical support for a new notion of 'situatedness'. This expanded perspective entails a conception of practice as interaction as taking place within a community, together with adjacent communities, which comprise an organization. This suggested view attempts to respond to modern day organizations' need to undergo transformational change through adopting new practices. In this view of situatedness and interaction, both knowledge *and* whole identities are developed by and develop an experience (Barab and Duffy, 2000). No boundaries delimit the development of knowledgeable skills, or 'knowing what', from the development of identities. This perspective argues that the current view of situated learning theory's focus on the identity of the new member, and the community, limits the construction of social identity since social identity transcends the personal and the social to include influences from a wider constellation of communities. Situatedness and interaction are thus expanded beyond legitimate peripheral participation to include *identity (re)negotiation*. To suggest communities of practice formulate social identity strictly on the basis of the community is to infer that communities are free from categorization, identification and comparison. Focusing on the social person

without acknowledging that a community identity is already in place affords only a partial view of what it means to become a full member of the practice since a community's history as well as its relation with adjacent practices are integral to social identity formation. This implies that the identity of a community is influenced by the constellation of communities in the organization of which it is part as a community categorizes, compares and experiences itself as part of its social production of identity.

Here, broader social systems concurrently frame and value organizational identity characteristics *as well as* practice-based knowledge. The evidence from this study demonstrates that communities of practice as social constitutions are subject to the principles of social identity theory, which introduces social influences that can impede learning at the community level. The findings further support a view of extending the current orientation of communities of practice as simply self-replicating systems when newcomers replace old-timers who leave a practice (Barab and Duffy, 2000). This new perspective sees communities as engaged in identity enactment as a mutually constitutive production of knowledge, both, within community as new members become full members, and as the community is influenced by its broader social system. Hence, as Orlikowski (2002:271) argues, sharing knowledge (transfer) is not a process of disembedding that knowledge from a community by switching in newcomers or counting on the mediating help of 'boundary objects, boundary practices, brokers or forums'. Instead, the transfer of knowledge is shown in this study to also be subject to a process of assisting actors to be able to enact that knowledge (Orlikowski, 2002) in contexts and conditions that are consistent with a (re)negotiated identity. Moreover, instead of solely concentrating on the type of knowledge (e.g. tacit or explicit) or transfer process, the evidence from this research adds to the view that it may be equally effective to conceive of developing people's capacity to *enact* knowledge. This is done through situated practice and by expanding their capacity for the simultaneous, mutual constitution of knowledge and a negotiated social and organizational identity.

Conclusions

Various authors have highlighted the key role of a shared identity. In a knowledge-based view a shared identity is the source of a sense of community in

which 'discourse, coordination and learning are structured (Kogut and Zander, 1996: 503). Other authors maintain that a shared identity enhances willingness for organizational cooperation and more frequent and free contributions towards goals and higher performance standards (Dutton et al., 1994). The evidence presented in this research demonstrates that *variation* in learning practices associated with an intended organizational identity is apparent and learning therefore is not necessarily an either/or situation where knowledge may or may not be produced. Accordingly, the potential benefits of shared identities for both actors and organizations could be at risk when members elect to withhold knowledge or refrain from participating in learning processes. This finding suggests that knowledge production in communities of practice is subject to influence by identity tension which itself can involve issues of identity alignment between the community and its broader social system. The study is limited in relation to the extent these findings may be generalizable beyond high reliability settings and because only two firms were studied. At the same time, additional research may shed light on the extent to which social and organizational identity tension serves as a mediating factor of learning in situations of change by researching organizations that are not considered 'high reliability'.

I have argued that a community's social identity both shapes its members and is shaped by its members in an ongoing dynamic fashion. This mutually constitutive process has implications for learning because as shown in this study, social identity and the way it is modified can impede *and* facilitate organizational learning. Thus, expanding the current understanding of situated learning theory by integrated social identity theory implies increased comprehension of key factors that might impede learning in practice-based settings. In the fast paced context of transformational change, learning new practice is more complex than the current situated learning theory proposes because with transformational change, 'situatedness and interaction' include the simultaneous co-production of knowledge and identity within*, and between,* communities of practice in an organization.

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