ROUTINE VERSUS INNOVATIVE ORGANIZATIONAL LEARNING: TOWARDS A RESOLUTION?

Theme: The Social Processes of OL and KM

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Abstract

Two major questions stem from the dichotomy that exists between routine and innovative learning processes which run throughout the organizational learning literature - whether there is an appropriate balance between different forms of learning and why organizations may find it easier to use routine forms of learning.

Data from a preliminary study of managers in the electrical power industry suggests managers institute processes, which are supposedly intended to enhance learning, but because of contradictions in their own behaviour, learning in practice is not supported. The study data further supports the idea that a failure to balance routine and innovative learning approaches may impede organizational learning.   In relation to interventions that are likely to enhance capability for productive learning, the use of facilitation is proposed to help organizations move from routine to innovative learning.

Introduction

While organizational learning is considered an important competence within organizational settings (Argyris and Schön, 1978; Cyert and March, 1963; Fiol and Lyles, 1985; Levitt and March, 1988), a strong dichotomy runs through the organizational learning literature between routine and innovative learning processes. A number of authors have used separate terms to label this dichotomy, and theorists generally express distinctions of emphasis.

We will first discuss the contending perspectives in the literature associated with these dichotomous learning processes particularly in relation to the processes that are frequently associated with productive learning (Argyris and Schön, 1978). Then we will explore two questions which have been debated extensively around various interpretations of routine and innovative learning processes. The first considers whether there is an appropriate balance between routine and innovative forms of learning and whether this should vary with circumstances and context, and the second question considers why some organizations may find it easier to use adaptive/ single-loop/ lower-order forms of learning. Finally, as a means to foster balance in learning processes, we will propose that managers use a multi-dimensional approach to organizational learning that centres on facilitating *both* routine and innovative learning processes with a concentration on generative learning.

Various distinctions of emphasis may be found in the organizational learning literature pertaining to the dichotomous perspectives surrounding routine and innovative learning processes. These distinctions have to do with examining what constitutes productive learning (Argyris: 1992) . For example, Argyris and Schön (1978) refer to single and double-loop learning. Single-loop learning can be equated to activities that add to the knowledge base or firm-specific competencies or routines without altering the fundamental nature of the organization's activities. Fiol and Lyles (1985), consider single-loop learning as lower-level learning, whereas Senge (1990) views single-loop learning as related to adaptive learning or coping. Finally, Mason (1993) sees single-loop learning as non-strategic learning.

In contrast, double-loop learning occurs when, in addition to detection and correction of errors, organizational players consciously question and modify existing norms, procedures, policies, and objectives. Double-loop learning involves changing the organization's

knowledge base, firm-specific proficiency or routines. (Dodgson, 1993) Double-loop learning is also called higher-level learning by Fiol and Lyles (1985), generative learning (or learning to expand an organization's capabilities) by Senge (1990), and strategic learning by Mason (1993). This strategic learning is defined as "the process by which an organization makes sense of its environment in ways that broaden the range of objectives it can pursue or the range of resources and actions available to it for processing these objectives." (Mason, 1993: 843).

As context, we have discussed the dichotomy in the organizational learning literature between different forms of learning. This discussion has to do with the overarching question of what may be considered productive learning. (Argyris: 1990) Because we see learning as an intersubjective human experience (Prus, 1996), we will mostly use the adaptive and generative distinctions as a means to examine balance in learning types. Generative learning as Senge (1990) postulates has to do with an organization's capacity to create and is team-based. It can be characterized as building blocks of experience within the firm, which are reinterpreted for future capability, and characterized by active associations. It uses generative thinking to actively integrate new ideas into a problem-finding framework (Driver: 2002), which results in connecting newly developed concepts to ideas raised throughout the organization. Senge argues that teams, not individuals are the fundamental learning unit in modern organizations and that unless teams learn, organization cannot learn. Against this background, we consider the first of the two major questions in this paper - whether there is an appropriate balance between different forms of learning and whether this should vary with circumstances and context. This first question is tackled in two parts.

First, we will examine the perspective of various authors (Driver, 2002; Weick, 2001; Brown and Duguid, 2000; Crossan, 1999) who argue that routine and innovative approaches to learning must be balanced, and still other authors suggest that the relative weight of the two approaches to learning should depend on the degree of turbulence in the business environment (Cangelosi and Dill, 1965; Crossan et al, 1999; Weick, 2001). Next we will explore the question of balance within an organizational setting by reviewing data from a pilot study. The study data is used to illustrate our argument that management behaviour is a significant variable for the two learning processes to be balanced. We further argue that balance in learning approaches depends on understanding the way managers respond to organizational issues and constraints.

Driver suggests that learning roles are a social construction of constituted behaviours that are routinely expected to meet the needs and interests of both the organization and the employee; as such, learning roles are negotiated between supervisors and employees performing work. She also distinguishes between routine learning, which involves routine problem solving and reality checking activities, and innovative learning which covers problem finding, the development of new processes, ideas, trials and experimentation (2002: 105). Driver's work points out the importance of the need to understand management's behaviour for consequent understanding of the relationship between the use of routine and innovative learning processes. She suggests that a role negotiation process between employee and manager conditions whether the individual learns either in a routine or an innovative way. And further, that while individuals are likely to specialize in one or the other learning role, there is also likely to be an integration of these processes at some level since goal accomplishment at the organizational level requires both specialization and integration of efforts (Katz and Kahn, 1966).

This line of thinking is echoed by other authors. For example, Brown and Duguid suggest that, "In providing standard output, routines permit the ready coordination of business processes. Consequently, organizations have a heavy investment in routine behavior – it is the key to orderly process, to process improvement, and to process coordination. On the other hand, to survive in a changing world, organizations also need to improvise, to break routine by trying new things, exploring new regions, finding new markets, developing new models. Improvisation, however, inevitably disrupts routine. Consequently, all organizations have to balance routine and improvisation" (2002: 108). And Crossan et al. (1999) emphasize the need for researchers and managers to extend their thinking to consider how different parts of the organizational learning system impact one another. As evidence of balance and a more pluralistic learning approach, the authors advance a theory of organizational learning which describes an organizational learning framework that incorporates the dynamic multilevel nature of the phenomenon and captures the rich interplay between process and level.

Because both routine and innovative approaches can cultivate organizational inquiry which results in learning, and subsequent benefits to an organization (Argyris and Schön: 1996), Weick's commentary on the prospect of advancing an either/or type of discussion on this subject is particularly relevant when considering whether or not routine or innovative learning approaches are adopted in a balanced way. He says, "There is currently an abundance of conceptual dichotomies that tempt analysts to choose between things like control and innovation, exploitation and exploration, routine and non-routine, and automatic and controlled, when the issue in most organizations is one of proportion and simultaneity rather than choice…Thus, a routine becomes something both repetitious and novel, and the same is true for innovation." (2002: 298)

We reason that the foregoing representation of views point out the importance of considering a balance in routine and innovative learning approaches based on an organization's particular business goals and the degree of turbulence in the firm's business environment. At the same time, how likely a balance in learning approaches can be achieved in practice, we argue is based on management's behaviour. And we consider this question using preliminary study data to inform our perspective.

PowerCo Study

PowerCo is a relatively new organization that was formed in response to a government decision to deregulate the electric power industry amidst a flurry of controversy over whether or not deregulation or the commodification of electricity is even feasible. PowerCo operates the wholesale market for buying and selling electricity, coordinates the operation of the electric grid and manages the electric transmission system. A number of similar organizations in the UK, New Zealand, Scandinavia and in the USA were established before PowerCo.

Between June and December, 2002 three of six PowerCo senior managers and one of the seven member executive team were interviewed. The interviews generated 112 responses to a variety of questions which covered areas ranging from learning processes to the types and extent of routine work activities. Also during the period, approximately 20 senior executive meetings served as a source for participant observation. Finally, various corporate documents

were reviewed for evidence of management's interest and approach towards fostering a learning environment. Managers, hence, are the primary unit of analysis in this initial investigation. A critical-interpretive approach informed from a symbolic interactionist perspective was adopted for the ethnographic study. An attempt to identify a grounded theory is the overall objective of the project which will carry on over the next six months.

The question of balance in different forms of learning is steeped in three controversial organizational learning issues. The first is what is meant by *productive learning*. The second has to do with *impediments to productive organizational learning* that arise in organizations and the third considers the kinds of *interventions that are likely to be effective in enhancing organizational capability for productive learning*. (Argyris: 1992)

This synopsis of Argyris' more detailed inquiry on controversial organizational learning issues is used as an orienting framework for our study. Various authors, (Fiol and Lyles, 1985; Sharma and Vredenburg, 1998), assert that productive learning is concerned with double-loop/higher order/strategic forms of learning. We contend that the views of (Argyris, 1992; Driver, 2002; Weick, 2001; Brown and Duguid, 2000; Crossan et al, 1999; Cangelosi and Dill, 1965) are particularly important in their arguments for a balance in learning approaches, and assert that without a conscious effort on the part of management to institute some level of balance in these approaches, productive organizational learning will not occur. We have found that a balance in routine and innovative learning approaches does not occur in practice in the subject firm of our study. We therefore regard this as a significant impediment to productive organizational learning and attribute this impediment to socio-political forces and their resulting influence on management behaviour.

In conducting the study, we attempted to be theoretically sensitive to potential emergent outcomes. (Locke: 2001) For example, on one hand, if we could determine evidence of productive learning founded on some level of balance in learning approaches, then we would examine the management practices that contributed towards this condition. We would consider these as interventions likely to enhance capability for productive organizational learning.

On the other hand, if we could *not* determine evidence of a level of balance in learning approaches, then we would concern ourselves with this lack of balance as an impediment to productive learning and examine the practices that took away from generative learning or its associated forms (double-loop/higher order/strategic).

From observing the senior leadership team over the study period it is evident that socio-political forces such as power and control are at work. The following memo characterizes the ritual-like weekly executive meeting – an intimidating environment and process in which employees are required to present new ideas. Paradoxically, employees often present these ideas in response to their interpretation of management's learning-based priorities.

Weekly meetings take place in the boardroom with its long dark wood table surrounded by black leather high-backed chairs. A green blinking light can be seen on the hip of each of the male executives with the only female, unblinking, deeply immersed in note-taking. The light comes from the mobile telephone worn on the hip like a hallmark of importance. Some executives wear a mobile on one hip and a pager on the other – 'signs' of being indispensable. Your most important idea can be lost in a second in favour of a vibrating

phone. Into this den, quavering voices make their 'pitch' for new ideas and process improvements. Ironically, improvements founded on learning continuously, - a corporate priority.

When asked how well the executive team operates with new, different or innovative learning processes, one of the executive members said:
Not well. We either try to avoid it. Argue against it. It's part of those two. We either argue against it or we just try to say, oh, we can't do that.

Study respondents seem to acknowledge the value to the organization associated with generative learning, yet they consider it a risky option to pursue independently. When asked if she would pursue something she had learned and felt was a worthwhile new idea with her executive leader, the study participant responded:
I wouldn't choose to die on that hill.

The study data indicates that because of social and micro-political factors PowerCo management choose routine learning activities, single-loop, adaptive or lower-order forms of learning – or learning activities which are expected to deliver a predictable outcome. Management opts for adaptive/routine learning processes which we have attributed to a defensive routine couched in what we term a myth of predictability. Thus, we reason that a balance in learning approaches does not exist in this firm, even though balancing different forms of learning seem to fit with the organization's learning-related challenges.

Easterby-Smith concludes that organizational learning processes that are situated in the technical perspective carry some difficulties when people and organizations do not behave according to rational calculation and where political agendas take precedence. (1999:3,4)

A learning approach like that found at PowerCo, which concentrates on the technical aspects of learning, using predominantly canonical or explicit sources and practices that are known to generate predictable outcomes, has its basis in routinization (March and Simon, 1958; Cyert and March, 1963) and the standardization of organizational operating practices and past procedures.

A member of the executive team reiterates the notion that PowerCo learns from those things that have been proven in the past and hence are intended to become the sources of learning in the present. The respondent said:
I think we move towards ideas that we can know the outcome of already, so the risk is out of it. Not totally, but certainly a significantly reduced risk, because whoever's bringing forward the idea already knows where the end-point is. So we already have a very significant piece of a preconceived end when the idea gets upstairs to the group [executive team]. So you've got to bring something so that people can see the end and they can buy into the end as opposed to buying into the idea.

We reason that even though it is generally accepted that canonical and codified knowledge diffuses more rapidly and efficiently, (Kogut and Zander, 1992; Nonaka, 1994, Zander and Kogut, 1995), the lack of using a balanced approach with learning processes eliminates the prospect for generative learning because the use of routine activities under differing conditions does not occur. (Zollo and Winter, 1999) Thus, the prospect for new knowledge, which emerges from applying routine activities in new contexts, is eliminated. We assert that

managers who prescribe this type of learning consider a predictable outcome more important in terms of organizational value than generative learning. Predictability is characterized as myth-like in light of Fischoff's experiments (1975) which show that people consistently overestimate the predictability of past events, once they know how they turned out as well as Lanzara's (1983) conclusion that, "In a world which has suddenly become turbulent, unreliable, unpredictable, and where the value of the 'precedent', once indisputable, is becoming of little help for present and future action", there is effectiveness in informal frameworks or communities of practice.

Why single-loop may be considered easier

The study data has suggested that managers choose routine learning processes over innovative processes. The notion as to whether a balance between single and double-loop; adaptive and generative; and lower and higher-order learning approaches should shift with circumstances and context in the business environment seems reasonable, but the action of doing so is highly unlikely at PowerCo given the lack of balance in these processes to begin with.

Our study data shows that PowerCo management does not foster a balance in routine and innovative learning approaches. This leads to a consideration of the impediments to productive learning and examine the practices that took away from generative learning or its associated forms (double-loop/higher order/strategic) and switch emphasis to the second question of why organizations may find it easier to use routine forms of learning over innovative approaches.

Defensive Routines

Argyris describes defensive routines as any policy, practice or action that prevents embarrassment or threat to the players involved, and at the same time, prevents learning how to reduce the cause of the embarrassment or threat that initiated the defensive routine in the first instance. He has described the organizational condition associated with defensive routines as over protective and anti-learning. (Argyris: 1992)

Argyris' definition of defensive routines does not fully contemplate how deeply these social processes are anchored in the organizational fabric and tends to emphasize the social-psychological rather than sociological or micro-political forces at work within the firm. For example, modelling as a powerful social learning force is not discussed. Our analysis builds on Argyris' considerations and takes into account these other important social conditions which permeate the workplace.

Implications

Our study evidence shows PowerCo management models processes that 'teach' how not to learn and exerted preferences for routine forms of learning such as single-loop, adaptive and lower-order learning as these forms are contradictory to innovative forms of learning.

As an example of 'teaching' that valued ideas ought to be based on a predictive outcome one respondent commented:

Well it's important to keep some scope on things, so innovation…ahhh…innovative ideas in our group would be typically geared towards something we're already doing or some project that's already on the books.

After a short pause, the participant elaborated:
I mean you could still go beyond what we do as a group, the systems that we support, the projects that are underway and still stay within the realm of PowerCo's business…we don't typically go there within the scope of what we're doing.

The notion of learning from different approaches other than the routine is consistent with empirical evidence advanced by Herasymowych and Senko (1998). The authors found that people learn most deeply when they have whole learning experiences or use preferred and non-preferred learning styles. This idea takes on greater meaning when considering the taken for granted (Argyris: 1992) tasks of the organization.

By way of example to illustrate how routine tasks that are taken for granted become reinterpreted and shift in their meaning, consider the example of signing one's name. If the signature is made using the hand that is typically used, the act of signing often occurs without thought – an example of tacit capability. The very same task takes on an entirely different meaning once attempted with the 'other' hand. Upon reflection of the exercise, participants in the test use words like 'more conscious', 'slowed' and 'deliberate'. They also talk about the procedure being 'uncomfortable' and 'unusual'. (Herasymowych and Senko: 2002) This simple demonstration assists with revealing how awareness and taken for granted assumptions surface which are symptomatic features of generative learning.

Thompson and McHugh offer an interpretation on how organizational culture may significantly influence a firm's predilection to learn from what it considers are socially acceptable processes, over learning from both routine and innovative processes in their discussion on 'modelling'. Founded on social learning theory, modelling does not remove or replace identity development practices for the individual. Modelling is not automaton-like mimicry. On this point, the authors argue that:

> We do not slavishly imitate the behaviour of those about us or even of those who appear to act in the most appropriate fashion in the specific situations we are in. We select those aspects of the activity we observe which we can usefully incorporate into our own repertoire of appropriately scripted behaviours. By modelling our behaviour in this fashion we avoid both indulging in wasteful and possibly embarrassing attempts to fit ourselves to our surroundings by trial and error, while managing to exert some control and influence over our own activity.

The notion of modelling may contribute to better understanding why organizations tend to choose learning from routine activities that are driven from what they consider to be a predictable outcome. This preference could be seen as a better option than attempting to learn from both routine and innovative sources which may not 'fit' what already has been established as the learning 'mold' and risking 'wasteful and possibly embarrassing' results. (Thompson and McHugh, 1990: 238)

Other group processes could also serve as mechanisms for transmitting socially acceptable and desirable learning processes and may also contribute to deeply anchoring these practices

in the organizational culture. Theorist Cass Sustein concluded from her study on the polarization of views, that when opinions are discussed within a group setting social influences had a significant effect on behaviour and decision-making. Even when individuals were polled anonymously afterwards, her research showed they are likely to shift in precisely the same way as they did within the group setting.

Sustein's work is founded on the classic experiments conducted by Solomon Asch (1956) who found that individuals were willing to abandon direct evidence of their own senses to remain in alignment with the group sentiment.

Learning Support Systems

Management's choices about learning support, learning environments and the source and style they elect to learn from are significant in the overall mix of organizational learning processes (Driver: 2002). As Feldman and Rafaeli's (1989) ethnographic studies have revealed an adaptive facet of routines, managers will need to select whether they will emulate or innovate (Martin and Porter: 2000) and the subject of their learning and what messages they will communicate throughout their organizations in this regard.

Argyris and Schön suggest that while humans cognitively design their actions and then intend to implement their designs, in practice the authors note a difference between the theories of action individuals espouse, and the ones they actually use in their theories-in-use. Further they postulate that while both of these theories are learned early in life and supported by features of societal and organizational cultures, they consider theories in use to be more powerful in explaining changing behavior, especially in relation to generative and double-loop learning. (1996: 75,76)

In order to achieve a shift from routine to innovative learning processes or to balance approaches with the degree of turbulence in the organization's business environment, managers can increase the organizational awareness between espoused theories and theories in use through facilitation (Argyris and Schön, 1974). Theorists have argued that employees cannot be forced to learn against their will and that the learning process will be most effective when managers themselves recognize a learning need and decide to engage in this process (Humble, 1973; Lloyd, 1990). Other authors (Lyons, 1985; Roberts, 1974) have argued that a climate which encourages, facilitates and rewards learning is a basic requirement if learning is to take place.

Some theorists (Weaver and Farrell, 1997; Antonacopoulou, 1999) suggest that managers need to learn how to be facilitators. The example used earlier of making a signature with the opposite hand highlights the notion that a routine activity, carried out in a non-routine way can lead to discomfort and while this mode of discomfort is precisely the condition that contributes to learning, if routine activities are typically used, few employees will venture into discomfort on their own. (Herasymowych and Senko: 2002). It is therefore the role of the manager committed to a work environment that fosters organizational learning to facilitate both routine and non-routine activities and to engender socially constructed learning processes that value emergent knowledge and reflection.

Managers acting in this role also serve as catalysts for 'teaching' different learning approaches as well as cultivating a work environment that promotes dialogue (Senge: 1990)

in a transitional way. Managers should not cover, displace or eliminate conversations within the group that reveal espoused theories versus theories-in-use and as Argyris (1992) suggests, 'The long-term solution is for the executives to learn to do these things well or help the group engage defensive routines in order to get rid of them'. (1992: 146)

Ironically, we see from the PowerCo study data, that a preoccupation with learning from what is within the bounds of a predetermined outcome organizations may measure what was learned from how closely it operated along the prescribed path set out in a planning document. In assessing its progress the measure may well be solely along the lines of 'how did we do?' as opposed to 'how did we do?' *and* 'what did we learn?'

Conclusion

This paper examined the managerial impetus to maintain a routine operating environment which generates predictable outcomes, and the type of socially constructed processes that are more closely aligned with generative learning and improvisation which inevitably, according to Brown and Duguid, "disrupts routine". (2002: 109)

We conclude that more research is required to understand better the relationship between management's modelling of particular learning processes in relation to organizational learning. We arrive at this conclusion from considering two major questions which have been debated extensively in the organizational learning literature – whether an appropriate balance between different forms of learning exists and whether this balance should vary with circumstance and context and second, why some organizations may find it easier to use adaptive/single-loop/lower-order forms of learning.

Concerning the question of balance, we have found that in this case balance can only be achieved in practice if management behaviour is commensurately considered and modified to react to organizational issues and constraints. Without considering management's behaviour, a dependency on work activities that intend to deliver predictable results and the associated normative behaviour and values that senior level management advocates may occur as it did in our pilot study, and a balance between routine and innovative learning processes will not exist in practice. We contend that without a conscious effort on the part of management to institute some level of balance in routine and innovative learning approaches, productive organizational learning will not occur.

We have surmised that this lack of balance in approach is consistent with defensive routines, but our analysis goes further to examine the implications of socially constituted, micro-political processes on management's preference to utilize rationally based learning approaches and have concluded that rather than enhancing learning, learning in practice is not supported. This particular defensive routine has been found to compromise social approaches to organizational learning, which stress relationships and collaborative sensemaking founded in negotiated meaning.

This paper contributes to understanding how negotiated meaning and management behaviour can affect balance in learning approaches. Numerous studies (Driver, 2002; Weick, 2001; Brown and Duguid, 2000; Crossan, 1999) argue routine and innovative approaches to learning must be balanced. But data presented in this paper suggests that a balance may not occur in practice because managers use adaptive/single-loop/lower order forms of learning to

deliver predictable results and hence steer learning towards an adaptive approach. Thus, generative learning and improvisation are compromised.

We have therefore suggested that a multi-dimensional approach is needed, founded on what Crossan (1999) terms a tension between assimilating new learning (exploration) and using what has been learned (exploitation). Although learning does take place in an environment that predominantly uses routine learning approaches, we suggest a management practice that combines exploitation, exploration *and* facilitation as a set of learning processes that propose a deeper, more integrated opportunity to create generative learning capability within the firm.

References

Antonacopoulou, E.P. (1999) Developing learning managers within learning organizations, in *Organizational Learning and the Learning Organization – Developments in theory and practice*. Easterby-Smith, M., Burgoyne, J., Araujo, L. (Eds.) London: Sage Publications.

Adler, P. S. and Cole, R. E. (1993). Designed for learning: A tale of two auto plants. *Sloan Management Review*, Spring, 85-94.

Argyris, C. (1992) *On Organizational Learning*. 2nd edition. Malden, MA: Blackwell Publishing.

Argyris, C. and Schön, D. A. (1978) *Organizational Learning: A Theory of Action Perspective*. London: Addison Wesley.

Argyris, C. and Schön, D. A. (1996) *Organizational Learning II: Theory, Method and Practice*. Reading, Massachusetts: Addison Wesley.

Asch, S. E. (1956) Studies of Independence and Conformity: A Minority of One against a Unanimous Majority. *Psychological Monographs*, 70:9 Bertram H. Raven, Jeffrey Z. Rubin. Social Psychology. New York: John Wiley and Sons, 1983.

Brown, J. S. and Duguid, P. (2000) *The Social Life of Information*. Boston, Massachusetts: Harvard Business School Press.

Cangelosi, V. E. and Dill, W. R. (1965) Organizational learning: Observations toward a theory. *Administrative Science Quarterly*, 10(2), 175-203.

Cohen, M. D. and Bacdayan, P. (1994) Organizational routines are stored as procedural memory: Evidence from a laboratory study. *Organization Science*, 5(4), 544-568.

Crossan, M., Lane, H. and White, R. (1999) An organizational learning framework: From intuition to institution. *Academy of Management Review*, 24(3), 522-537.

Cyert, R. M. and March, J. G. (1963) *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall.

Dodgson, M. (1993). *Organizational Learning: A Review of Some Literatures*. Organization Studies Vol 14(Issue 3): 375-394.

Driver, M. (2002) Learning and leadership in organizations: Toward complementary communities of practice. *Management Learning*, 33 (1), 99-126.

Feldman, M. S. and Rafaeli, A. (2002): Organizational routines as sources of connections and understandings. *Journal of Management Studies*, Vol. 39, No. 3, 309-331.

Fiol, C. M. and Lyles, M. A. (1985) Organizational learning. *Academy of Management Review*, 10, 803-813.

Fischoff, B., Beyth, R. (1975) "I knew it would happen": Remembered probabilities on once future things. *Organizational Behavior and Human Performance*, 13, 1-16.

Lanzara, G.F. (1983) Ephemeral organizations in extreme environments: Emergence, strategy, extinction. *Journal of Management Studies*, Jan. (20): pp. 71-95.

Herasymowych, M and Senko, H. (2000) *Creating Whole-Thinking and Whole-Learning Experiences* MHA Institute Inc. University of Calgary.

Katz, D., Kahn, R. L. (1966) *The Social Psychology of Organizations*. New York: John Wiley & Sons, Inc.

Kogut, B. and U. Zander (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science* Vol. 3(3): 383-397.

Locke, K. (2001) *Grounded Theory in Management Research*. London: Sage Publications.

March, J. G. (1990) Exploration and exploitation in organizational learning. *Organization Science*, 2(1), 71-87.

Martin, R.L, and Porter, M.E. (2000) Canadian competitiveness: Nine years after the crossroads. Rotman School of Management, University of Toronto, Harvard Business School

Miner, A. S. and Mezias, S. J. (1996) Ugly duckling no more: Pasts and futures of organizational learning research. *Organization Science*, 7(1), 88-99.

Morrison, E. and Milliken, F. (2000) Organizational silence: A barrier to change and development in a pluralistic world. *Academy of Management Review*, 25(4), 706-725.

Nonaka, I. (1994). A dynamic theory of knowledge creation. *Organizational Science.* 5(1): 14-37.

Piderit, S. (2000) Rethinking resistance and recognizing ambivalence: A multidimensional view of attitudes toward an organizational change. *Academy of Management Review.* 25(4), 783-794.

Prus, R. (1996) *Symbolic Interaction and Ethnographic Research: Intersubjectivity and the Study of Human Lived Experience.* New York: State University of New York Press

Senge, P. M. (1990) *The Fifth Discipline: The Art and Practice of The Learning Organization.* New York: Currency Doubleday.

Sharma, S and Vredenburg, H. (1998) Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal*, 19(8), 729-753.

Sustein, C.R. (2000) Deliberate trouble? Why groups go to extremes. *The Yale Law Journal*, 110(1), 71-119

Thompson, P, and McHugh, D.(1995) *Work Organisations.* London: MacMillan Press Ltd.

Tyre , M. J. and von Hippel, E. (1997) The situated nature of adaptive learning in organizations. *Organization Science,* 8(1), 71-83.

Weaver, R.G. and Farrell, J.D. (1997) *Managers as Facilitators*. San Francisco: Berrett-Kochler Publishers Inc.

Weick, K. E. (2001) *Making Sense of the Organization.* Oxford, UK: Blackwell.

Zander, U. and B. Kogut (1995) Knowledge and the speed of the transfer and limitation of organizational capabilities. *Organizational Science,* 6(1): 76-92.

Zollo, M. and Winter, S. (1999) *From Organizational Routines to Dynamic Capabilities.* University of Pennsylvania working paper.