The social construction of organizational learning and knowledge: An interactional perspective

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The notion that learning and knowledge are socially constructed in organizations seems to be gaining ground in the literature (and in particular in this conference volume). These gains c be traced to two related theoretical developments. The first development pertains to a conceptual shift from an individual to a social perspective on organizational learning (Easterby-Smith et al., 2004). Individual learning refers to an inner mental process through which information and knowledge are acquired and processed. It is a predominantly cognitive process, directed at the enhancement of the mental models (or cognitive structures) guiding behavior. Social learning refers to a process in which knowledge acquisition is situated and grounded in interaction, activity and practice in everyday organizational life and work. The emphasis is not so much on knowledge (cognitive, facts and skills), but on knowing (behavioral, something we do)(Elkjaer, 2003; Vera & Crossan, 2003).

The second development pertains to a conceptual shift from a content to a relational perspective on knowledge. Authors from the content perspective regard knowledge as a mental commodity that can be codified and stored in systems and exchanged between individuals and individuals and systems (e.g., Alavi & Leidner, 2001; Davenport & Prusak, 1998; Gallupe, 2001; Nonaka, 1991; 1994; Nonaka & Takeuchi, 1995). Authors from the relational perspective regard knowledge as a relative, provisional and context-bound phenomenon, with a focus on the processes of knowing and acting. Knowledge is socially embedded in communities and intimately tied to day-to-day practice (e.g., Blackler, 1995; Bogenrieder & Nooteboom, 2004; Breu & Hemingway, 2002; Hayes & Walsham, 2003; Huysman, 2004; Plaskoff, 2003).

Authors from the social and relational perspectives have sometimes criticized the individual and content approaches for vagueness of their definitions, their weak empirical base and prescriptive standpoints (e.g., Alvesson & Kårreman, 2001; Hayes & Walsham, 2003; Tsoukas & Vladimirou, 2001). Yet the social and relational perspectives themselves cannot fully escape similar critiques. What exactly does take place when knowledge is being socially constructed in organizations? How do we distinguish learning from acting and interacting? What exactly constitutes the relational nature of knowledge? What seems to be missing in these perspectives is a theory of communication and interaction with which to approach such questions.

In this working paper I propose an interactional perspective on knowledge and learning that intends to shed more light on the processes underlying the social construction and the situated, relational nature of knowledge. Grounded in the work of the Palo Alto schools on learning and communication (e.g., Bateson, 1958; 1972; 1979; Haley, 1963; Ruesch & Bateson, 1951; Watzlawick et al., 1967) and based on my earlier work in these areas (Visser, 2003ab; 2004), learning and knowing are viewed in terms of behavioral interaction at the level of context and relationship.

To develop this perspective, I first distinguish between three orders of knowledge and learning. Second, I discuss pathologies in learning and double binds and show their implications for organizational knowledge construction. Finally, the paper is summarized and conclusions are drawn. Throughout this paper, I will use the well-known experiment of the ‘neurotic

dog' to make my concepts clear at a relatively simple, straight forward level. Further, I define learning as the process of acquiring knowledge, following a tentative definition by Easterby-Smith & Lyles (2003: 3).

Three orders of knowledge and learning

In a classical salivary conditioning experiment, a dog is trained to respond differentially to two stimuli, a circle and an ellipse. The appearance of the circle is repeatedly accompanied by food. After several pairings of food and circle, the dog learns to salivate in response to the circle alone. The appearance of the ellipse is not accompanied by food. Consequently, the dog learns not to salivate in response to the ellipse alone. When the dog sufficiently has been conditioned to discriminate between the conditioned stimuli, the task is slowly made more difficult. In consecutive trials the experimenter gradually reduces the contrast between the stimuli by making the ellipse somewhat fatter and the circle somewhat flatter, until the ratio of the semi-axes in the ellipse reaches 9:8. After three weeks of working on this differentiation, the dog increasingly fails to discriminate between the two forms. At the same time it starts to exhibit symptoms of severe disturbance (like violently barking and squealing, biting its keeper, refusing food, becoming disobedient, etc.). When the contrast between the stimuli is increased again, the dog gradually becomes quieter and returns to its normal state. When subsequently the contrast between the stimuli is reduced again to 9:8, the dog again starts to exhibit symptoms of disturbance (Pavlov, 1927: 289-293).

To account for knowledge acquisition and learning in this experiment, I propose a distinction between three orders of knowledge, which correspond to three orders of learning (Bateson, 1972; 1979; 1996/1971; Watzlawick et al., 1967). The reader should note that this is an analytical distinction of learning process occurring concomitantly:

(1) The dog acquires knowledge *of* things: it becomes aware of the objects circle and ellipse through his senses. Acquiring this knowledge corresponds to zero-learning. It involves the simple receipt of a signal, not subject to correction by earlier experience. Following this, one can speak of zero-order knowledge.

(2) The dog acquires knowledge *about* the objects circle and ellipse, their relationship to the occurrence of instances of reinforcement and punishment, and thus their importance for his survival. Acquiring this knowledge corresponds to proto-learning. The dog learns to respond to the experimental contingencies of reinforcement, i.e. to adapt his behavior to instances of reinforcement and punishment. Following this, one can speak of first-order knowledge.

(3) The dog acquires knowledge about the *context* in which the objects and his responses become related. Acquiring this knowledge corresponds to deutero-learning. The dog learns about characteristic patterns of contingency, or contexts of conditioning, in his relationship to the experimenter and the laboratory environment in which the experi-

ments take place. In other words, the dog learns to (proto-) learn. Following this, one can speak of second-order knowledge.

For humans (and arguably, for dogs as well) the acquisition of zero-order knowledge alone is very rare. It would amount to a perception for which no explanation from past experience or present context is available, producing a world of merely unexplainable, uncontrollable and unpredictable events and objects which would be quite anxiety-producing (Mineka & Kihlstrom, 1978; Watzlawick et al., 1967).

First- and second-order knowledge is commonly acquired by humans in continuous interaction with physical and social objects in their environment. From this interaction, humans develop an awareness of contexts of consequences and a habit of responding to future contexts. For example, a person who (like Pavlov's dog) is reared under or subjected to a prolonged situation of classic conditioning will increasingly expect contexts in which signs of future reinforcements can be detected, but nothing can be done to influence the occurrence of reinforcement. In mental terms such a person is likely to adopt an attitude of fatalism. This experience with earlier contingency patterns leads to a habit of acting as if all new contexts exhibit the same pattern. The habit of expecting a certain pattern of events in its turn tends to become self-validating by promoting certain behaviors and by discouraging others. The fatalistic person who behaves passively and waits silently for things to happen fulfills his own expectations (Bateson, 1958; 1963).

Mental characteristics like awareness, habit, experience and attitude do not exist in a social vacuum. These characteristics can always be redefined in terms of a relation between a person and somebody or something else. In relational transactions there are contexts of proto-learning that bring about the deutero-learning to which the mental characteristic refers. Here stimuli, responses and reinforcements acquire meaning in contingency patterns of interchange. These patterns are defined by the participants as characteristics of their relation, depending upon their subjective patterning of events. For example, when in ongoing interchange person A as a rule provides positive reinforcements in response to the stimuli, provided by person B, one could characterize the relationship between A and B in terms of supporting and leaning (Bateson, 1963; 1972; Bateson & Jackson, 1968).

In human relations, contexts of proto-learning are introduced in two ways. First, a message, sent by one person, sets the context for a certain class of response by the other person. Second, non-verbal signs (like tone of voice, facial expression, gestures and bodily posture) function as a context marker of the verbal message, therefore as a 'context of context' for the other person. This setting of contexts is inevitable in interpersonal exchange, since in interaction the categories stimulus, response and reinforcement are never 'empty.' All behavior (verbal and non-verbal) occurring between persons who are conscious of each other's presence has behavioral effects, whether intended or not. Such effects have interpersonal message value, and therefore are communicative in nature. Since for humans it is impossible not to behave in one way or the other, it follows that in interaction it is impossible not to communicate (Bateson, 1963; Haley, 1963; Watzlawick et al., 1967).

When applied to organizations, the social construction of knowledge predominantly pertains to second-order knowledge. It is acquired through deutero-learning, the learning of characteristic patterns of contingency in an organizational context. Such learning is intimately tied to behavioral interaction and communication. In an organizational context, all behavior that is emitted in the presence of others has effects on those others, intended or unintended. Those effects, describable in proto-learning terms as reinforcing or punishing consequences, are mutual and continuous. At the same time members deutero-learn: they come to discern regularities or patterns in the numerous consequences they experience in the course of their working days and they come to behave accordingly. The knowledge they thus acquire is inherently relational, i.e. tied to transactions with their social and physical environment.

Double binds

The 'neurotic dog' experiment implies that, from an interactional perspective, learning and knowledge acquisition are by no means unproblematic. Bateson has interpreted the disturbed behavior of the dog as pathological deutero-learning. In the beginning of the experiment the dog deutero-learns that it acts in a context for discrimination. The whole experimental setup, the laboratory situation and the course of the experiment contains numerous context markers for this discrimination purpose. At the point when discrimination becomes impossible, these markers become misleading. At once the animal enters a context in which it no longer should show discrimination, but instead should resort to guesswork and gambling. Obviously, the dog is not able to adapt to this sudden breach of contexts. Bateson has supported this interpretation with two observations from other animal experiments. First, dogs that are not trained in discrimination do not show signs of disturbance when randomly confronted with slightly different ellipses and circles. Second, when similar experiments are conducted outside the laboratory, the dogs fail to develop these symptoms. Bateson concluded that the 'neurotic dog' is being put in the wrong at the deutero-learning level. In other words, it is placed in a double bind situation (Bateson, 1972; 1979; 1996/1971; Ruesch & Bateson, 1951; Watzlawick et al., 1967).

The double bind situation has four interdependent and jointly operative characteristics (Bateson, 1972; Visser, 2003a):

(1) Two or more communicants are involved in an intense relationship with a high (physical or psychological) survival value for at least one of them. For example, in the experiment the dog is critically dependent upon the experimenter for food, shelter, attention and affection.

(2) In this relationship incongruent messages are regularly given that at one level assert something, but at another other level negate or conflict with this assertion. The first message often takes the form of a negative injunction, threatening some behavior with punishment. The second message conflicts with the first at one or more points and is also enforced by punishments or signals that threaten survival. For example, in the ex-

periment the presence of the circle signals the occurrence of reinforcement to the dog, while the presence of the ellipse signals punishment (i.e. the absence of reinforcement). When circle and ellipse come to resemble each other too much, the resulting stimulus signals an incongruent message that threatens the basis of reinforcement of the dog.

(3) In this relation the receiver of the incongruent messages is prevented from withdrawing from the situation or commenting on it. The receiver may be prohibited from escaping the field or (s)he may not have learned on which level of communication to respond. For example, in the experiment the dog is kept in a leather harness during the experiments that drastically curtails its freedom of movement and permits no escape from aversive stimuli.

(4) Double binding in this sense is a long lasting characteristic of the situation, which, once established, tends toward self-perpetuation. For example, in the experiment the dog remains highly sensitive to the 9:8 stimulus when shown after the experiments.

The social construction of knowledge in organizations may be subject to comparable double bind characteristics, which foster pathological deutero-learning and may induce stress and anxiety in organization members, comparable to Pavlov's dog. In the sparse research on double binds in organizations, the four characteristics have been applied as follows:

Ad (1): The 'intensity' of the relationship has been related to the degree of psychological identification members feel toward their organizations and work. Members who feel highly attached to their organizations and work experience more stress and anxiety in a double bind situation than members who feel less or not attached (Tracy, 2004). The 'survival value' of the relationship has been related to hierarchical dependency in organizations. Members who feel more dependent on management experience more stress and anxiety in a double bind situation than members who feel less dependent (Dopson & Neumann, 1998; Steier, 1995).

Ad (2): The 'incongruent communication' and 'threats of punishment' have not been researched in organizations. However, in psychological experiments in which subjects have been exposed to incongruent communication in an atmosphere of punishment, a significant amount of stress and anxiety has been measured in those subjects. It may be supposed that organizations members who repeatedly are exposed to these two factors experience more stress and anxiety in a double bind situation than members who are less or not exposed to these factors (e.g., Bowers & Sanders, 1974; Dush & Brodsky, 1981; Smith, 1976).

Ad (3): Being 'prevented from withdrawing from the situation' has been related to the personal and financial status and benefits members receive from their organizations and to their beliefs that other organizations will not provide equal status and benefits, or worse, to fears of being fired and becoming unemployed. Members who perceive a high negative difference between current status and benefits and possible future status and benefits experience more stress and anxiety in a double bind

situation than members who feel a negative or no difference in this respect (Dopson & Neumann, 1998). Being 'prevented from commenting on the situation' has been related to the 'total institution' atmosphere of organizations that deal with life-death emergencies and emotionally intense problems (examples are prisons, correctional facilities, police, armed forces, hospitals, mental institutions, secret services and fire departments). The large difference in emotional intensity between life inside and outside such organizations, the necessity of strong unit cohesion and clear leadership in recurrent emergency situations, the classified nature of some activities all limit the possibilities of meta-communication inside and outside these organizations. Members who are exposed to a strong 'total institution' atmosphere experience more stress and anxiety in a double bind situation than members exposed to a less pronounced 'total institution' atmosphere (Tracy, 2004).

Ad (4): The 'long lasting' characteristic of the double bind has been found to be less essential, even when some other aggravating conditions were present. The stress and anxiety in the experiments, mentioned under (2), occurred in spite of the relatively short period, the transient nature of the subjects' relation to the experimenter and the relatively lenient nature of the punishments involved. Thus in experiments this characteristic has been only modestly present, arguably less so than in many organizations (as the results of Dopson & Neumann and Tracy suggest).

Summary & conclusions

In the current literature a conceptual shift is discernible from an individual to a social perspective on organizational learning and from a content to a relational perspective on knowledge. Learning and knowledge increasingly are regarded as socially constructed in organizations. In this working paper I have outlined an interactional perspective that intends to shed more light on the processes underlying the social construction and the situated, relational nature of knowledge. Conceptually, the knowledge that is socially constructed in organizations is regarded as second-order knowledge, acquired through deutero-learning. Learning and knowledge of these kinds are inherently relational, i.e. intimately tied to behavioral interaction and communication with the social and physical context in organizations. Under certain conditions learning and knowledge of these kinds may lead to a double bind situation, which may induce stress and anxiety in organizational members.

The added theoretical value of this interactional perspective seems to lie in two specific notions. First, it adds the notion of the 'impossibility of not communicating'. This notion points at the significance of all forms of social interaction between organizational members who are aware of each others' presence. Noting that second-order knowledge is acquired in social contexts, one could extend this notion and propose the 'impossibility of not constructing knowledge socially' in organizations. Such knowledge is intimately tied to relationships and to the mutually exchanged verbal and non-verbal behaviors that constitute these relationships. Sec-

ond, it adds the notion that learning and knowledge are not necessarily positive or neutral phenomena. Under double bind conditions, the social construction of knowledge may become pathological, leaving the organization and its members increasingly maladjusted to environmental contingencies. More generally, the interactional perspective provides additional theoretical clues as to how interpretations of reality are formed in interaction and how pathologies in interpretation are formed and maintained in organizations.

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