Journal of OrgChange Mgmt 2007.20:272-289.

Received March 2005
Revised January 2006
Accepted March 2006

Organizational intelligence: a structuration view

Ali E. Akgün
Science and Technology Studies, Gebze Institute of Technology, Turkey
John Byrne
Lubin School of Business, Pace University, New York, NY, USA, and
Halit Keskin
Science and Technology Studies, Gebze Institute of Technology, Turkey

Abstract

Purpose – This paper aims to unify the fragmented views on organizational intelligence from the perspective of Giddens' structuration theory.

Design/methodology/approach – The paper used a case study of a firm, which is a small electronics manufacturing group located in the New England area of the northeast USA. Data were collected by observation, oral histories and through discussion and interviews with organization members.

Findings – It was observed that a structuration view of organization intelligence removes the individual/organization level intelligence dichotomy, and integrates the fragmented studies on the epistemology of intelligence, e.g. cognitive, behavioral and social/emotional.

Research limitations/implications – Propositions for further research are formulated. However, findings are derived on the basis of a substantive case study in a particular country. Further, research needs to expand this base to encompass other organizations in a wider range of countries across different cultures.

Practical implications – This paper helps managers to assess and to operationalize organizational intelligence.

Originality/value – This paper proposes a more comprehensive understanding of intelligence in organizations.

Keywords Intelligence, Organizations, Organizational behaviour, Electronics industry, United States of America

Paper type Research paper

Introduction

As a fascinating concept and intriguing research area, "intelligence" finds strong appeal in many disciplines outside of individual and cognitive psychology (Sternberg and Kaufman, 1998). One of the disciplines that provoked increased interest in the importance of intelligence is the management and organization development literature (Glynn, 1996; March, 1999; Stalinski, 2004). Even if we disregard the entire literature in which organizational intelligence was supposedly aggregated (Kurzman and Owens, 2002), the term is still ambiguous in the context of organizational development scholarship. This is true because there is a lack of a unified theory of intelligence in organizational settings as noted by the numerous and fragmented perspectives and ideas of researchers in the field (Glynn, 1996). Specifically, researchers investigated organizational intelligence from different epistemological perspectives,

Journal of Organizational Change Management
Vol. 20 No. 3, 2007
pp. 272-289

0953-4814
DOI 10.1108/09534810710740137

such as cognitive, behavioral and social/emotional. Each perspective touches upon different avenues of this complex phenomenon and each attempts to compensate for the other. For instance, while cognitive perspective highlights the internal structures and processes, i.e. information-processing capabilities, it puts the environment in a passive role and asserts representational dependence and relative contextual independence (Serpa, 2000). Interestingly, the behavioral perspective addresses behavior-environment relationships resulting in the adaptive behavior of organizations to the external environment (Serpa, 2000), while omitting information-processing capabilities (Schlinger, 1992).

In addition to, the epistemological perspectives, the ontological basis of intelligence, i.e. individual and organizational, causes a confusion about who or what has the intelligence in an organizational setting and thereby leads to the reductionism of the organizational intelligence phenomenon. Even though there is little doubt that organizational intelligence is related to individual intelligence by mechanisms of aggregation (e.g. individual members' intelligence accumulates to become organizational intelligence), cross-level transference (e.g. individuals' intelligence is transformed and codified as organizational intelligence), and distribution (e.g. organizational intelligence is embedded in the structured patterns of thought and action in which organizational members interact and engage) as noted by Glynn (1996, p. 1089), the dividing line between individual and organizational intelligence is too imprecise to readily allow differentiation of these constructs.

As organizations consist of:

- individuals, and their reciprocal interactions, knowledge, behaviors, cognitions, feelings, emotions, and functional cultures;
- information processing infrastructures, such as information technologies; and
- interpretive systems for environmental events[1], one should blend the different perspectives and ontology on intelligence to highlight a more comprehensive view of organizational intelligence, and to better explain an intelligent organization.

Such dualism of individual and organization does not ensure that the two elements address the whole of intelligence. Also, different epistemologies, such as cognitive, behavioral and emotional, though conceptually distinct are interdependent, and not separate or opposed. Accordingly, the goal of this study is to argue how the blending of the different schools of thought can lead to a comprehensive understanding of organizational intelligence in the management and organizational development literature. Organizational intelligence is an inherently social process[2] (Glynn, 1996; Akgün *et al.*, 2003), in which building theories of organizational intelligence based on theories of individual intelligence alone tends to ignore. In turn, the application of individual intelligence fails to capture the social nature of organizational intelligence, thus requiring a social theory to form the basis of:

- a coherent and adequate account of the role of individuals in organizational intelligence; and
- to merge the different views on intelligence.

To address this, we use Giddens' structuration theory to leverage the understanding of organizational intelligence, because the relationship between individual and organizational or collective phenomena is at the heart of the theory, and Giddens'

Journal of OrgChange Mgmt 2007.20:272-289.

Journal of OrgChange Mgmt 2007.20:272-289.

analysis of structure enables addressing the interplay of cognition, behavior, and social systems (Giddens, 1984; Staber and Sydow, 2002; Berends *et al.*, 2003). Specifically, structuration theory neither neglects the individual nor the organizational level nor reduces organizational intelligence to one of those levels. This is not without its own controversies as structuration theory has been criticized on many fronts (Edwards, 2000). For instance, Mestrovic (1998) chides Giddens for overemphasizing knowledge and skills. However, the researchers propose that structuration theory provides useful sensitizing devices to develop the notion of a comprehensive view of organizational intelligence in this study.

In the sections that follow, we:

- explain the concept and phenomenon of intelligence as used in different streams of research and as identified by Glynn (1996), Huber (1990), Sandelands and Stablein (1987), Choo (1998), and Huy (1999);
- briefly address the structuration theory of Giddens;
- illustrate, support, and elaborate on the use of the structurationist model of organizational intelligence by examples drawn from a case study conducted by a university's research department, and then generate proposals; and
- discuss the implication of structuration theory from the managerial perspective.

Background

In her seminal study, Glynn (1996) noted that the term "organizational intelligence" is used variedly as:

- a description of information-processing capabilities as well as the outcome of this process;
- a description of the intelligence of people as well as aggregation of their intelligence; and
- a metaphor for organization, and a property of the organization.

Despite these different views, many writers agree on the basic conceptual definition of that which possesses intelligence as having the:

- capacity for information processing, learning and problem solving;
- ability to adapt to and reshape its environment; and
- ability to understand the feeling, thoughts and behaviors of people, and to act appropriately upon that understanding (Sternberg and Kaufman, 1998; Sternberg, 1985).

Specifically, these different conceptualizations of intelligence converged on the three epistemological views: cognitive, behavioral, and social/emotional perspectives (Shepard *et al.*, 1999; Serpa, 2000). Each epistemological perspective and embedded ontological base is discussed below.

Cognitive perspective

Cognitive theory emphasizes the computational perspective and mental representations exemplified by behavioral decision-making research in the fundamentals of information processing arena (Schlinger, 1992). In this vein, individual intelligence is conceptualized

as information-processing capability that is used to solve problems or meet task challenges. Simon (1976), for instance, notes that cognitive science is the study of intelligence and defines intelligence as a diverse set of information processing abilities. Glynn (1996), by investigating the literature on individual intelligence, pointed out that individual intelligence is conceptualized as information-processing capability.

Sharing similar functional properties, at the organizational level, cognitive perspective highlights the information-processing capability perspective of organizational intelligence (Glynn, 1996; Choo, 1998). Specifically, intelligence is conceptualized as an organization's information-processing capability, which seeks to understand and predict how organizations perceive, interpret, store, disseminate and utilize information. For instance, McMaster (1996, p. 3) states that:

> Organizational intelligence refers to the capacity of a corporation as a whole to gather information, to innovate, to generate knowledge, and to act effectively based on the knowledge it has generated.

Wilensky (1967) viewed organizational intelligence in terms of gathering, processing, interpreting and communicating the information needed in decision-making processes.

Following this school of thought, "intelligence" is perceived as a thing or an entity that an organization possesses, upon which it acts on and thereby changes its environment. The cognitive perspective stresses a logical formal structural approach that highlights intelligence as a fixed property of organizations, because organizations have information processing systems, they have intelligence. This "fixed property" view of intelligence indicates that all organizations have intelligence, and that neither the organizations nor individuals in them are unintelligent. However, in practice, while some organizations use their information-processing capabilities effectively, acting "intelligently," others do not use their information-processing capabilities effectively, acting less intelligently[3]. Also, this view provides a description or a result rather than a definition or an explanation of organizational intelligence. For instance, Howe (1998) argues that the term intelligence is sometimes seen as productivity. He points out that simply stating that one factory is more productive is not a satisfactory explanation for why one factory produces more than another. According to him, the term "productive" does not explain anything; it is just another term for what is already known. For him, "productive" is a valuable descriptive term, it is not an effective explanatory concept. Finally, treating intelligence as an entity causes problems of reification and circular reasoning, because the cognitive perspective emphasizes the computational view exemplified by the work of mental representations, related to perception, attention and memory and information-technologies.

The components of organizational intelligence in the cognitive perspective are the information-processing capabilities constructs, such as capabilities to acquire information, its interpretation, dissemination, storing and implementation (Huber, 1991). The capability to acquire information refers to the ability of an organization to gather data from various sources, including customers, competitors, economic assessments, financial statements, social reports, consultants, new employees, acquisitions and mergers, and so on. Information interpretation capability means the ability to construct, filter, organize, and frame information in a meaningful way. Information dissemination capability means the ability of an organization to distribute and share information in organizations through a variety of means, including formal

Journal of OrgChange Mgmt 2007.20:272-289.

communication means (e.g. memos, reports, bulletin boards, and face-to-face meetings) as well as informal communication means (e.g. coffee-breaks, water-cooler discussions, hallway meetings, and so on). Information storing capability is the ability to store information in the organization's history, routines and beliefs (Walsh and Ungson, 1991). Information implementation capability refers to the ability to use or utilize information to solve problems during the new product development process, technology transfer, or marketing and administration processes.

Behavioral perspective

The behavioral school of thought sees intelligence not as a fixed property, but as a characteristic defined, if not bound, by behaviors. Schlinger (2003), for instance, argued in the "Myth of Intelligence" that intelligence is not an entity or a fixed quantity; rather it is like other terms such as mind or personality in that the only objective referents are the behaviors that occasion the terms. Specifically, he suggests that one should analyze the word to understand this concept clearly. He notes that the word intelligence comes from Latin *intellegere*, meaning to perceive or understand, from the roots inter meaning between or among, and *legere*, meaning to gather, pick or choose (Schlinger, 2003, p. 24). He further argues that these roots do not refer to inferred essence or qualities, but rather to behaviors, in this case, gathering, picking and choosing. Thus, according to Schlinger (2003), intelligence, or intelligent behavior, is what we observe when we say that an individual perceives and makes an appropriate choice (i.e. reacts to relationships between or differences among situations). In this respect, intelligence is related to and demonstrated by adaptive behavior, achieving the goals and satisfying the desires and motivations of individuals.

A similar view of intelligence can be seen in the organizational level of analyses (Glynn, 1996). According to this school of thought, an organization demonstrates its intelligence when it responds to the changing conditions, problems and other issues in an adaptive manner, by modifying its behavior (Doise and Mugny, 1984). In this sense, intelligence is the disposition of an organization to adapt its behavior. For instance, Sandelands and Stablein (1987, p. 138) describes the intelligence as:

> ... the ability to maintain a working similarity between mind and nature... more generally, this ability is concerned with achieving and maintaining congruence or isomorphism between what is mind (i.e. ideas, feelings) and what is external.

Weber *et al.* (1996) also said that intelligence "... is the ability of an organization to shape and change the environment and to adapt to its environment based on its aims and abilities."

However, this adaptation view of intelligence, which is typically used as an adjective rather than a noun, is not a "thing in the head," but a characteristic of behavior. Behaviors that are deemed intelligent or not intelligent may indeed be in the eye of the beholder and not readily objectively determined, because in this school of thought intelligence contains an abstract-defining feature (Howe, 1998). Further, determining whether a given behavior is adaptive requires a large amount of complex information, because adaptiveness varies with context, time frames, goals and numerous other variables. In particular, it is not clear, what behaviors and the context in which they occurred or were observed, leads one to use the term intelligence, and what accounts for intelligent behavior in the organizational development scholarship.

Journal of OrgChange Mgmt 2007.20:272-289.

Also, by its context, intelligence is descriptive and does not go beyond the observations of adaptive behavior.

The components of organizational intelligence, from the behaviorist's perspective, are the adaptive capability constructs, such as multiplexity, redundancy, and loose coupling as pointed out by Staber and Sydow (2002). Multiplexity refers to the number and diversity of relations between actors in organizations. In essence, multiplexity refers to the degree to which the same people are involved in different networks in an organization. Multiplexity helps people distribute information throughout an organization and access a variety of points of views. It thereby, provides the development of a shared organizational mind (Staber and Sydow, 2002). Redundancy is defined as resource slack reflected in the presence of surplus employees, unused productive capacity, broad job description, tolerance for mistakes, parallel communication channels, or idle information (Nohria and Gulati, 1996). It is a cushion that allows organizations to adjust internal structures successfully for external pressures. Loose coupling refers to the strength of linkages between organizational elements. Loose coupling denotes that a range of units and activities are relatively independent and can adjust to changing demands in different ways and at varying rates (Orton and Weick, 1990). For instance, Staber and Sydow (2002) pointed out that loose coupling in an organization implies that control is decentralized and information travels slowly and unevenly; the norms and rules are evaluated and scattered thinly throughout the organization; and members are allowed to execute daily duties at their own discretion and draw on a variety of inconsistently related criteria to interpret their participation.

Journal of OrgChange Mgmt 2007.20:272-289.

Social/emotional perspective

Social intelligence is characterized as the ability to accomplish interpersonal tasks or the ability to understand and relate to people (Fatt, 2002). Social intelligence describes an individual's capacities to discern and respond appropriately to the moods, motivations and desires of other people by involving social perception (the ability to understand social-emotional clues) and social inference (the ability to infer underlying motives and traits) (Conte, 1999). Social intelligence includes the idea of emotional intelligence, interpersonal and intrapersonal intelligence, and practical intelligence (Mayer *et al.*, 2000). It is worth stating that social intelligence is equated with emotional intelligence in general and emotional capability in particular in organizational development settings. Initiated by Salovey and Mayer (1990, p. 189), who perceived emotional intelligence as a subset of social intelligence, emotional intelligence is defined as "the ability to monitor one's own and other's feelings and emotions, to discriminate among them, and to use this information to guide one's thinking and actions." Emotional intelligence is manifested as harmonious relationships among workers. This harmony is the basis of the synergistic sharing of skills and competencies and of creating and sustaining informal networks (Goleman, 1995). However, emotional intelligence depicts an array of non-cognitive capabilities and competencies and does not directly address the mental processes needed to cope with environmental demands and pressures. Also, emotional intelligence is descriptive rather than exploratory, because an emotionally intelligent response to a real-life problem is not well-defined and often depends on mitigating circumstances. As the emotional intelligence construct is still new and under investigation, it is not clear how to decide whether a response to a stimulus is emotionally intelligent or not.

From the emotional intelligence construct perspective, the components of organizational intelligence consist of the emotional capability constructs, including the dynamics of experiencing, reconciling, identification, encouragement, displaying freedom, and playfulness (Huy, 1999). Emotional experiencing refers to the quality of an organization's efforts to identify the variety of emotions, to accept and internalize them, and to act on a deep level of understanding. Emotional reconciliation is the process of bringing together two seemingly opposing values people feel strongly about. The emotional dynamic of identification refers to the collective behavior whereby organization members express their deep attachment to salient organization characteristics. The emotional dynamic of encouragement denotes the organization's ability to instill hope and success among all of its members. Displaying freedom refers to the organization's ability to facilitate the variety of authentic emotions that legitimately can be displayed (and felt) in the organization. The dynamic of playfulness describes the ability of an organization to create a context that encourages experimentation and that tolerates mistakes, thus providing a safe and protective work environment.

A unified model for organizational intelligence

An overview of structuration theory

Giddens (1984) employs the concepts of duality of structuration to explain the dynamic relationship between human agency and the structure[4] of social systems. Instead of agency and structure standing separate and opposed, they are brought together in a "duality of structure," that is structures are reproduced and transformed only through agency, and agents can come into existence only within a structured environment. Agency and structure are treated as distinct but thoroughly interdependent and cannot exist separately (Weaver and Gioia, 1994; Berends *et al.*, 2003). Giddens (1991, p. 204), for instance states that:

> In seeking to come to grip with problems of action and structure, structuration theory offers a conceptual scheme that allows one to understand how actors are at the same time the creators of social systems yet created by them. It is an attempt to provide the conceptual means of analyzing the often delicate and subtle interlacing of reflexively organized action and institutional constraint.

In the structuration theory, the continuity of social reproduction of organizations is based on the reflexive monitoring of social activity by the agents. Routinization of actions occurs when the actors reflexively monitor their actions and store (remember) or incorporate those actions for future use (Berends *et al.*, 2003; Heracleous and Hendry, 2000). Following Giddens' theory, in order to draw upon pre-existing rules and resources and then reproduce them, actors have to be "knowledgeable" of them. To be knowledgeable means that the individuals are aware of and understand the circumstances of their actions and the rules they follow. However, actors do not necessarily depend on existing structures (Sydow *et al.*, 1998), as they have the power to act otherwise. This implies that the means whereby systems are reproduced contain within them the seeds of change (Sydow *et al.*, 1998). The interactions of knowledgeable actors, performing actions, which are subsequently considered to manifest intelligence, are thus labeled "intelligent."

In addition to, the recursive interplay of structure and actors, Giddens' theory also simultaneously addresses cognition, behavior, and emotions as interrelated aspects of the processes through which structures are constituted (Staber and Sydow, 2002). According to structuration theory, structure and action should be investigated with

Journal of OrgChange Mgmt 2007.20:272-289.

respect to three aspects; signification, legitimation, and domination. Signification refers to the cognitive aspect of social praxis in social systems (Staber and Sydow, 2002; Lewis and Suchan, 2003), indicative of semantic rules ("This is how we do it in this organization") (Staber and Sydow, 2002). The signification structure provides actors with a number of interpretative schemes or standardized stocks of knowledge or references to communicate the reality of their actions in the production of interaction. Specifically, signification comprises rules, procedures and techniques to produce meanings to which agents refer via interpretative schemes when they communicate.

Structures of legitimation, in addition to this cognitive dimension, refer to the normative aspect of social practice. It indicates "This is how we should do it" (Staber and Sydow, 2002). These structures provide agents with rules to which they refer when guiding or sanctioning a particular behavior or outcome. Legitimation structure binds agents' actions according to the accepted norms regulating and sanctioning interaction.

Structures of domination comprise allocative and authoritative resources. Allocative resources (control over material) refer to capabilities generating command over objects, goods or material phenomena. Allocative resources involve material features, produced goods. Authoritative resources (control over persons) refer to transformative capability generating command over persons or actors by highlighting emotions. Authoritative resources involve the organization of social time and space, and the relation of human beings in mutual association, and more importantly, emotions (Sydow *et al.*, 1998)

Finally, according to Giddens (1984), the modalities (interpretative schemes, norms and facilities) link the process of interaction or human action (involving communication, power and sanction) with the structural components (signification, domination and legitimation) of social systems.

In the second half of this study, we will support and elaborate on the structurationist perspective and illustrate how it can illuminate processes of organizational intelligence. For that purpose we will use a case study of a firm. Data were collected by observation, oral histories and through discussion and interviews with organization members.

The company used for this analysis is a small electronics manufacturing (SEM) group located in the New England area of the northeast USA. At the request of the owner/founder, the name of this privately-held company is changed for publication. SEM, Ltd specializes in the design and manufacture of electronics used in the optics and integrated circuit manufacturing industries. In addition to, electronics manufacturing, many of the instruments require precision mechanical design, machine work and assembly.

In 1975, after an approximately 15-year tenure, the SEM founder left the employment of a century-old global precision optics company. He recognized that the existing corporate inertia prevented him from the development and introduction of new products and otherwise fully demonstrating his abilities. Trained as a precision mechanic and machinist, the founder is self-taught in electronics design and manufacturing. A traditionally oriented firm, the SEM maintains control by the oversight of family members, and focuses on quality work, craftsmanship, attention to detail and a strong work ethic.

The company offers its products to the USA and European "scientific" markets and maintains corporate offices overseen by company executives, including family members.

Journal of OrgChange Mgmt 2007.20:272-289.

The design engineering and prototype area is under the direct control of the founder, while manufacturing is headed by a trained engineer in ISO-9001 requirements, software programmers were headed by the Chief Programmer. Sales and marketing includes a specialized team of agents overseen by a family member and the overall control of the facility is governed by the V.P. of Operations who is not related to the family. Of particular note, new hires are required to demonstrate their ability to perform and are routinely interviewed by the founder. Academic credentials are considered important but not a requirement, whereas demonstrable ability is required. This stems from the founder, who does not have formal academic training.

This 50-person manufacturing company follows a hierarchical structure and is governed not only by rules, guidelines and expectations mandated by codified specifications for ISO-9001 compliance but also by the corporate culture developed over its 30-year history. Also note that the nature of the work performed at the company is by engineers and scientists for their peer client base of engineers and scientists.

Structuring organizational intelligence

At SEM, Ltd we observed that organizational intelligence both shapes and is shaped by organizational rules and resources. For instance, the information-processing capability of the organization was influenced and guided by pre-existing rules and resources. Specifically, how individuals received, stored and interpreted the information was constrained by the organizational interpretive schema, routines, procedures, and culture through which individuals viewed their worlds. Structures acted as information filtering mechanisms that process the information consistent with the current organizational schemas. Also, the people who controlled the resources strongly influenced the information-processing capability of the company. This was apropos since the information process was determined by the group of people steering the organization, namely, top management. Next, legitimation, the normative aspect of the organizational structure, determined how people in the company process information. For example, organizational norms, what individuals "can and cannot" do, governed how they process information. In short, how information/knowledge is gathered, shared and manipulated was related to the signification aspects of structuration and depended on existing rules and their interpretation and use by organizational actors for sanctioning events or behaviors. Interestingly, it should also be noted that structural properties of the organization were concurrently influenced by the information-processing capabilities of that organization. After new information was processed and then used, the organization learned new things, and then the individuals in the organization changed their behaviors. Information and knowledge reshaped the roles of individuals in the organization, while routines and procedures were reshaped based on the cumulative new information/knowledge.

In our discussions with the SEM company staff, they noted that in the "early days" communications were rather direct – "... the boss said it, and we did it ... there was no discussion ..." As new employees came on-board, they learned from those who were their that while "... opinions were appreciated, the final decision was from the boss and it was not negotiable ..." Similarly, expectations of certain "standards" were well-established and understood, namely, arriving on-time for work, defined lunch and break times and no alcohol consumption during business hours.

Journal of OrgChange Mgmt 2007.20:272-289.

As an engineering-based firm, technical guidelines also established an analytical approach to problem-solving, though it was also a source of "one-upmanship" where knowledge and creativity were seen as rewards. One engineer noted a technical error that caused a significant problem with a microprocessor-based controller. "When in doubt, the standard way one would look at the design is to check it against the manufacturer's examples and recommendations." According to all checks, the system was designed and built as specified. Prior to this, before a change could be made, the senior engineers and the founder had to be informed and other sources of input were consider interference. In this instance, a bench technician, an outsider, commented that maybe the suggested design worked well in a lab but not in the real world where there is a lot of electrical noise. That simple comment forced the engineers to stop trying to confirm what they did right and to look at the application – 30 minutes later the problem was solved. Included with the solution was a reprimand from the founder never to ignore the bench technicians and to listen to input from others. "We all work for the same company," he stated.

In regard to the emotional capability of the organization, we observed that organizational rules and resources shaped emotional dynamics, and were in-turn shaped by emotional dynamics. For instance, personal and organizational interpretive schemas determined how people identified the variety of emotions and whether to accept and internalize them, and how to act on a deep level of understanding. In particular, interpretative schemes fostered stocks of knowledge that human actors drew upon to make sense of their feelings and emotions and those of others. Also, emotions were influenced by the organizational norms enlightened by legitimization. For instance, collective behavior whereby organization members express their deep attachment to salient organization characteristics was shaped by organizational power structures and norms. Additionally, people used power in their interactions by drawing on facilities, such as material and human resources allocation, to reconcile emotions-based concerns. At the same time, emotional dynamics reshaped the organizational structures. For example, creating a context that encourages experimentation and that tolerates mistakes during any action – the dynamics of playfulness, developed new interpretive schemas for signification. Innovations created by experimentations and learning by doing exerted new understanding and mental models for the organization, and challenged the phenomenon of "how we do the job here" norms. Also, the organization's ability to facilitate a variety of authentic emotions that legitimately could be displayed (and felt) in the organization led to changes of some power structures and facilitated mutual associations of people.

In our discussions with the SEM company staff, they noted that an established rule at the firm is that the boss, especially the founder, has ultimate authority, which is understood and justified since he founded the company and lead its development. On two occasions noted by the staff, senior engineers got into a heated argument with the founder. These conversations were terminated by the statement "... remember, you are only an employee ..."

However, as noted above in the episode with the bench technician, the founder entertained a certain amount of flexibility in his approach to the employees when they could prove they had a valid technical point. The staff noted in conversations with us that an engineer had once challenged the founder and won his praise through a demonstration of technical competence. A sense of pride permeates SEM as the

Journal of OrgChange Mgmt 2007.20:272-289.

employees and management recognize that world-leading high technology companies choose their products and have done so for 30 years. This legitimization of SEM's products is similar to the early days of Microsoft where Bill Gates stated that he had to do business with IBM as this would confirm the quality of his product and validate his company. The SEM staff also recalled many stories of practical jokes played on each other, everything from switching parts, miswiring a tool or piece of equipment, to setting up a remotely operated device that smelled of burning electronics. One recalled a story about when, in the middle of a rather hectic day, the founder answered the telephone, "city zoo," only to find out it was the president of their largest customer calling. When asked about following tried and true guidelines versus experimental designs, the staff brought several interesting points to light:

> Traditionally, all connections we made to printed circuit cards were soldered; there was no other reliable choice. It was a well-established technology, understood, and nothing else was seen as reliable. In discussing the time it took to assemble a system, the cost of materials, cleaning, environmental costs and labor, we asked ourselves "can we go solderless?" The switch-over went beautifully and it also precipitated a challenge to other ways we manufactured our products. The point now asked – "how can we do it better?" We learned that established solutions might not work in all cases but attention to quality is a requirement in all cases.

What we noted here is that there were many interrelated issues. A technical challenge was deemed objective and was met with an analytical review, whereas a challenge that was not deemed technical was interpreted as personal or a direct affront, which might be met with unhappy consequences. In managerial and leadership training one is reminded to address the problem not the person, a bit of advice that sometimes is lost.

Finally, we observed that the organization's adaptive capability influenced and was influenced by SEM's organizational rules and resources. The organization's adaptive capability was constrained by the peoples' interpretive schemas and organizational resources. In particular, how people perceived and interpreted external stimuli determined their responses to fit with environmental characteristics. Also, the organizational resources, which provide a cushion, helped the organization to adjust internal structures to external pressures. Further, norms, power and routines, which determine the core-competence of the organization, either hindered or permitted the organization to restructure its strategy and architectures for changing conditions. At the same time, adaptation encompassed changes in the organization's control systems (e.g. power), resource allocation (e.g. domination), and infrastructures (e.g. technology know-how).

Our interview with organization's members also revealed that the SEM company is helped greatly by its ability to integrate precision mechanics with electronics. By the same token, they are constrained by it, a form of corporate myopia. When asked why the company's product line has not changed in 15 or more years, the staff noted several points:

> Well, we started out making a data imaging device for cameras, followed by specialized controllers and then power supplies for optical systems. After many years we added robotic handlers. At the same time, the company switched from a small "mom and pop" shop to an ISO-9001 manufacturing facility. This was achieved when the founder stepped away from this part of the business and told us to "get it done." We hired a specialist and the ISO change-over was implemented.

Journal of OrgChange Mgmt 2007.20:272-289.

> We make excellent products and have few competitors. The market for our goods is strong and consistent. We also accept special low-volume projects as long as we are confident with the outcome. We did experiment several times with computer devices, toys and some mass-market items but were not successful in those arenas.
>
> Within the confines of the company and their product line, SEM can and does adapt successfully. However, like Intel's recognition that to them everything looks like a microprocessor, SEM has difficulty succeeding outside of its established market.

Based on our observations and the statements of people we interviewed, we assert that reciprocal interactions among the cognitive, behavioral and social/emotional schools render the phenomenon of organizational intelligence more visible and accessible. However, under structuration theory, these interactions are dynamic rather than a static and as we observed, organizational intelligence is created, potentially changed and then recreated by the reciprocal interactions between agents in organized settings. These agents interact and perform actions involving and manifesting information processing, adaptive, and emotional capabilities in the context of signification, domination, and legitimation. Accordingly, it is proposed that:

P1. Organizational intelligence is a manifestation of information processing, adaptive and emotional capabilities which are instantiated, reproduced, and changed through structures of signification, domination, and legitimation, and vice verse.

Even though organizational intelligence is the manifestation of information processing and emotional, and adaptive capabilities, we observed that reciprocal interactions of each component of the information processing, emotional and adaptive capabilities process defines organizational intelligence so that it can be expressed quantitatively or put into operation. However, we should also note that those interactions were mediated by the process of interaction or human action, involving communication, power, and sanction. For instance, we observed that, multiplexity, the strength of the working relationship or bond, permitted people to tap into diverse repositories of knowledge and facilitated the rapid spread of information. Especially, frequent contact or "tight" working relationships among people helped them to:

- gather a variety of information and knowledge;
- construct, filter, organize and frame them in a meaningful way;
- store them into the organization's history;
- disseminate them throughout the organization by a variety of means; and
- utilize them to solve problems and aid in decision making.

Instead of just involving information exchange, working relationships also included resource exchange, advice, friendship, and so on. People identified the variety of emotions, and accepted and internalized them by their working relationships. This became more important when the emotional intensity and intimacy of the relationship and the extent to which such feelings were reciprocated were due to the frequency of contacts and communications. At the same time, information requirements and needs for utilization forced people to strengthen the working relations. Our interview with organization's members also revealed that:

Journal of OrgChange Mgmt 2007.20:272-289.

> Yes, we are all engineers here, in one form or another. The founder is a precision machinist by training but is an accomplished electronics design engineer and entrepreneur – he started the company. Several of the staff have experience in many areas of technology, including mechanics, optics life sciences and, of course electronics, but even in this area we have many different types. One specializes on power circuits and another might be microprocessors and, of course, we have our programmers. Each makes a contribution and often enough it is outside of his/her area of "expertise." A fresh look at things is often all that we need to go forward.
>
> We mentioned earlier the engineering problem resolved by a bench technician. A rather unusual problem came up regarding color selection of characters for a computer screen. One of our engineers suggested we consider that a user might have some color blindness and we should consider including software code to address this. There is a strong need to assist each other to be successful.
>
> Less one believe that everything is engineering, when a member is in trouble or needs help, both the company and the staff jump into help. Many years ago, before insurance, one of the staff needed glasses – we took care of it. Another member had a medical problem with his wife – the engineers took over his work and the company assisted with the insurance claims. We help each other.
>
> On a lighter subject, many of the staff meets after hours, sometimes during the week and often attending sports and other events. The company sponsors annual picnics and occasionally brings in pizza and soda for the staff – a small thank you, but one that is really appreciated.

In this case, we saw also that redundancy contributed to organizational intelligence in terms of the distribution of information, tasks, and relations. When information redundancy was combined with multiplex knowledge structures that link people with diverse competences, new interpretations and meanings emerged leading to the expansion of knowledge. Redundancy of information and relations enhanced the emotional capability of the organization as well, because understanding the feelings of each other and reconciling the diverse emotions have been achieved by the greater contributions, relations and interpretative schemas that have historically occurred in the company. Concurrently, information exchange and dissemination, and close emotional ties improved the redundancy. We asked if anyone found that they need more coworkers with the same training, and if redundancy was a problem:

> Well that sounds like it could be a problem but the only problem that we note is one of being short-staffed, not one of "too many cooks." For the most part we share a common language, which is a great asset and most have skill sets that overlap to different degrees. This helps greatly in general discussions as well as problem solving – it makes us a part of the company. What happens is that no one is left on his/her own unless he or she wishes to be left alone. There are occasions when there is a difference of opinions, but this is often caused by the different parties having differing interests, like the sales and engineering departments – always a discussion between those groups.

Next, we found that loose coupling helped people to tap into a large pool of diverse information/knowledge and interpretive schemas. Loose coupling reduced the risk of repeating mistakes and encouraged the abandonment of old habits and behaviors, which were dysfunctional under new circumstances and reduced the disputes on emotions and feelings via communications, interactions and collective actions.

Journal of OrgChange Mgmt 2007.20:272-289.

In our interview with the organization's members, we asked if the company had ever found itself making the same mistake twice, this revealed that:

> Sure, when we hire someone we don't like. In truth, we don't always know who we will get until after they join.
>
> As far as our products are concerned – well, there are a couple of views here. First, we stay with success and then look to how we can do it better and second, if we find something that didn't work – it is remembered, usually by many, sometimes too many. However, we also try to consider why we had a failure and if it was the situation at the time. For example, we tried "flex time" where staff could come in at different times of the day as long as they are all in between certain hours. Well, the first attempt was a disaster, it really messed up our production, a lack of trust was also developing; we had to stop it. We looked at it again and finally gave up on it, at least for a few years.

Therefore, based on the above discussion, it is proposed that:

P2. Organizational intelligence is operationalized as the reciprocal interactions of multiplexity, loose coupling, redundancy, information acquisition, interpretation, dissemination, storage, and implementation, and the dynamics of experiencing, reconciling, identification, encouragement, displaying freedom and playfulness which are mediated by the process of interactions or human actions.

So far, it has been argued that epistemological perspectives on intelligence can be converged based on structuration theory. However, note that individual intelligence cannot be dismissed when exploring organizational intelligence or separated from epistemological perspectives. Structuration theory articulates organizational intelligence by linking the actions of people at the time of social engagement to the ongoing and enduring organizing principles of cognitions, behaviors and emotions. People can observe reality, identify causality, develop new knowledge and then change them to form a basis for their actions based on the reflexivity. Specifically, structuration theory highlights the importance of "knowing" as embracing an ongoing reflexive process of enhancing organizational intelligence, because human actors know what they know and who they are. For example, Giddens (1984, p. 5) wrote that:

> The reflexive monitoring of activities is a chronic feature of everyday action and involves the conduct not just of the individual but also of others. That is to say, actors not only monitor continuously the flow of their activities and expect others to do the same for their own; they also routinely monitor aspects, social and physical, of the contexts in which they move.

In a sense, reflexivity explores organizational intelligence based on the tensions and interrelationships of meaning, realities, and theorizing – a weak theory of organizational becoming (Cunliffe, 2003, p. 987), because organizational intelligence is not separate from the people who compose it and live in it. Also Cunliffe (2003, p. 985) said that:

> Reflexivity unsettles representation by suggestion suggesting that we are constantly constructing meaning and social reality as we interact with others and talk about our experience. We therefore cannot separate ontology and epistemology, nor can we ignore the situated nature of that experience and cultural, historical and linguistic traditions that permeate our work.

Journal of OrgChange Mgmt 2007.20:272-289.

Since, reflexivity can act upon people to construct and unconstruct their own knowledge, and highlights the intersubjective and indexical nature of meaning (Cunliffe, 2003), it is proposed that:

P3. Ontological and epistemological perspectives within which the phenomenon of intelligence is perceived and the concept upon which intelligence is articulated are significantly bounded by the process of reflexivity and its embedding in organizational settings.

Concluding remarks

In this paper, we argued that the understanding of organizational intelligence can be leveraged by the structuration theory. Emphasizing the duality of structures and reflexivity, structuration theory furnishes a framework for a complementary understanding of organizational intelligence. Specifically, a structuration framework highlights the structural (e.g. information processing), functional (e.g. behavioral), and social attributes of organizational intelligence. By doing this, structurating organizational intelligence helps managers to design, improve and control the compositions of organizational intelligence. Also, introducing the knowledgeability of people for demonstrable use, structuration theory provides an expanded notion of what managers and employees can do. Thus, managers and other people have the ability to not only monitor their behavior, but to also oversee their monitoring and adjust their actions to address the active and dynamic aspect of organizational intelligence. Organizational intelligence, in this regard, is an everyday activity cognitively distributed and demonstrated by the behavior of the people, and the culture and routines of the organization. Next, structuration theory helps managers develop awareness and observe that individual intelligence, networked in collectives, is actualized by the communications, culture and routines to a greater gestalt. Specifically, people can be seen as setting actions into intelligence along with other people, with intended as well as unintended interactions. Also, given the recursiveness of organizational life as indicated by structuration theory, intelligence develops, evolves and becomes dissociated from individuals or groups *per se*. In this perspective, organizational intelligence is not an entity, rather an activity – a property of the combined interactions among individuals, collectives and the environment.

From the perspective of epistemology, structuration theory helps managers to assess and to operationalize organizational intelligence. Organizational intelligence does not represent the "IQ" of managers, similar to managerial cognition, nor is it the sum of the individuals. The assessment of organizational intelligence goes beyond the cognitive perspectives. Since, organizational intelligence develops from and is embedded in the day-to-day activities of the organization, its assessment involves social, emotional, behavioral and cognitive dimensions. In this sense, organizational intelligence is a multidimensional and multifaceted concept involving the recursive interplay of cognitive, behavioral and emotional capabilities of organizations. In particular, the nomological networks among these capabilities, tied together by the organizational culture, is the foundation of organizational becoming, thus helping managers to asses the organizational intelligence. Also, structuration theory helps researchers and managers to operationalize organizational intelligence. Specifically, organizational intelligence can be actualized by the reciprocal interactions among the

Journal of OrgChange Mgmt 2007.20:272-289.

information processing factors, emotional dynamics, organizational slacks and multiplexity which are mediated by organizational routines and resources.

Organizational intelligence is a new and important topic in organizational behavior and development scholarship. However, researchers should also investigate organizational intelligence empirically. The multidimensional and multifaceted nature of organizational intelligence can be tested by operationalizing information-processing capabilities, emotional capabilities and adaptive capabilities. Next, how organizational intelligence impacts the organizational performance and processes, such as innovation orientations of firms can be tested. Note that researchers should consider the environmental conditions, type of organizational culture (e.g. clan, ad hocracy), type of innovation (e.g. incremental versus radical), size and age of organizations, and type of organizational control (e.g. central versus informal) while testing the relations between organizational intelligence and organizational performance indicators.

Notes

1. This is similar to Glynn's (1996) assumptions for the conceptual boundaries of organizational intelligence.
2. The process approach of organizational intelligence points out the variables or constructs where intelligence is a function. The process-oriented approach defines real activities or experiences, rather than the consequences that unspecified activities might have or processes could have (Sandelands and Drazin, 1989).
3. Whereas "unintelligent" is not absolute, we are speaking of the degree to which an organization acts intelligently, akin to the traditional psychometric IQ test.
4. Structures are defined as recursively organized rules and resources that individuals draw on and reconstitute in their day-to-day activities.

References

Akgün, A.E., Lynn, G.S. and Byrne, J. (2003), "Organizational learning: a socio-cognitive framework", *Human Relations*, Vol. 56, pp. 839-68.

Berends, H., Boersma, K. and Weggeman, M. (2003), "The structuration of organizational learning", *Human Relations*, Vol. 56 No. 9, pp. 1035-56.

Choo, C.W. (1998), *Information Management for the Intelligent Organization*, Information Today, Medford, NJ.

Conte, R. (1999), "Social intelligence among autonomous agents", *Computational & Mathematical Organization Theory*, Vol. 5 No. 3, pp. 203-28.

Cunliffe, A.L. (2003), "Reflexive inquiry in organizational research: questions and possibilities", *Human Relations*, Vol. 56 No. 8, pp. 983-1003.

Doise, W. and Mugny, S.G. (1984), *The Social Development of the Intellect*, Pergamon Press, New York, NY.

Edwards, T. (2000), "Innovation and organizational change: developments towards an interactive process perspective", *Technology Analysis & Strategic Management*, Vol. 12 No. 4, pp. 445-64.

Fatt, J.P.T. (2002), "Emotional intelligence: for human resource managers", *Management Research News*, Vol. 25 No. 11, pp. 57-74.

Giddens, A. (1984), *The Constitution of Society: Outline of the Theory of Structuration*, University of California Press, Berkeley, CA.

Journal of OrgChange Mgmt 2007.20:272-289.

Giddens, A. (1991), *Modernity and Self-identity*, Polity, Cambridge.

Glynn, M.A. (1996), "Innovative genius: a framework for relating individual and organizational intelligences to innovation", *Academy of Management Review*, Vol. 21 No. 4, pp. 1081-111.

Goleman, D. (1995), *Emotional Intelligence: Why it can Matter More than IQ*, Bantam Books, New York, NY.

Heracleous, L. and Hendry, J. (2000), "Discourse and the study of organization: toward a structurational perspective", *Human Relations*, Vol. 53 No. 10, pp. 1251-86.

Howe, M. (1998), "Intelligence as explanation", *British Journal of Psychology*, Vol. 79, pp. 349-60.

Huber, G.P. (1990), "A theory of the effects of advanced information technologies on organizational design, intelligence, and decision making", *Academy of Management Review*, Vol. 15 No. 1, pp. 47-71.

Huber, G.P. (1991), "Organizational learning: the contributing processes and the literatures", *Organization Science*, Vol. 2, pp. 88-115.

Huy, Q.H. (1999), "Emotional capability, emotional intelligence, and radical change", *Academy of Management Review*, Vol. 24 No. 2, pp. 325-45.

Kurzman, C. and Owens, L. (2002), "The sociology of intellectuals", *Annual Review of Sociology*, Vol. 28, pp. 63-90.

Lewis, I. and Suchan, J. (2003), "Structuration theory: its potential impact on logistics research", *Journal of Physical Distribution & Logistics Management*, Vol. 33 No. 4, pp. 296-315.

McMaster, M.D. (1996), *The Intelligence Advantage: Organizing for Complexity*, Butterworth-Heinemann, Newton, MA.

March, J. (1999), *The Pursuit of Organizational Intelligence*, Blackwell, Oxford.

Mayer, J.D., Caruso, D.R. and Salowey, P. (2000), "Emotional intelligence meets traditional standards for an intelligence", *Intelligence*, Vol. 27 No. 4, pp. 267-98.

Mestrovic, S.G. (1998), *Anthony Giddens: The Last Modernist*, Routledge, London.

Nohria, N. and Gulati, R. (1996), "Is slack good or bad for innovation?", *Academy of Management Journal*, Vol. 39 No. 5, pp. 1245-64.

Orton, J. and Weick, K. (1990), "Loosely coupled systems: a reconceptualization", *Academy of Management Review*, Vol. 15 No. 2, pp. 203-23.

Salovey, P. and Mayer, J.D. (1990), "Emotional intelligence", *Imagination, Cognition and Personality*, Vol. 9, pp. 185-211.

Sandelands, L. and Drazin, R. (1989), "On the language of organization theory", *Organization Studies*, Vol. 10, p. 457.

Sandelands, L.E. and Stablein, R.E. (1987), "The concept of organization mind", in Bacharach, S. and DiTomaso, N. (Eds), *Research in the Sociology of Organizations*,Vol. 5, JAI Press, Greenwich, CT, pp. 135-61.

Schlinger, H.D. (1992), "Intelligence: real or artificial", *The Analysis of Verbal Behavior*, Vol. 10, pp. 125-33.

Schlinger, H.D. (2003), "The myth of intelligence", *The Psychological Record*, Vol. 53, pp. 15-32.

Serpa, L.F. (2000), "Epistemological assessment of current business intelligence archetypes", *Competitive Intelligence Review*, Vol. 11 No. 4, pp. 88-101.

Shepard, R., Fasko, D. Jr and Osborne, F.H. (1999), "Intrapersonal intelligence: affective factors in thinking", *Education*, Vol. 119 No. 4, pp. 633-73.

Simon, H. (1976), *Administrative Behavior*, 4th ed., Free Press, New York, NY.

Journal of OrgChange Mgmt 2007.20:272-289.

Staber, U. and Sydow, J. (2002), "Organizational adaptive capacity: a structuration perspective", *Journal of Management Inquiry*, Vol. 11 No. 4, pp. 408-24.

Stalinski, S. (2004), "Organizational intelligence: a systems perspective", *Organization Development Journal*, Vol. 22 No. 2, pp. 55-67.

Sternberg, R.J. (1985), "Implicit theories of intelligence, creativity, and wisdom", *Journal of Personality and Social Psychology*, Vol. 49 No. 3, pp. 607-27.

Sternberg, R.J. and Kaufman, J. (1998), "Human abilities", *Annual Review of Psychology*, Vol. 49, pp. 479-502.

Sydow, J., Well, B. and Windeler, A. (1998), "Networked networks: financial services networks in the context of their industry", *International Studies of Management & Organizations*, Vol. 27 No. 4, pp. 47-75.

Walsh, J.P. and Ungson, G.R. (1991), "Organizational memory", *Academy of Management Review*, Vol. 16, pp. 57-91.

Weaver, G.R. and Gioia, D.A. (1994), "Paradigms lost: incommensurability vs structurationist inquiry", *Organization Studies*, Vol. 15 No. 4, pp. 565-89.

Weber, S.E., Liou, Y.I., Chen, M. and Nunamaker, J.F. (1996), "Toward more intelligent organizations", in Manning, R.W. and King, D.R. (Eds), *Organizational Intelligence: AI in Organizational Design, Modeling and Control. Information Systems*, IEEE Computer Society Press, Los Alamitos, CA, pp. 29-30.

Wilensky, H. (1967), *Organizational Intelligence*, Basic Books, New York, NY.

Corresponding author
Ali E. Akgün can be contacted at: aakgun@gyte.edu.tr

Journal of OrgChange Mgmt 2007.20:272-289.

This article has been cited by:

1. Jari Stenvall, Petri Virtanen. 2015. Intelligent Public Organisations. *Public Organization Review* . [CrossRef]
2. Gabriele Giorgi. 2013. Organizational emotional intelligence: development of a model. *International Journal of Organizational Analysis* **21**:1, 4-18. [Abstract] [Full Text] [PDF] [Supplemental Material]
3. Ali E. Akgün, Halit Keskin, John Byrne. 2012. Antecedents and Contingent Effects of Organizational Adaptive Capability on Firm Product Innovativeness. *Journal of Product Innovation Management* **29**:10.1111/jpim.2012.29.issue-s1, 171-189. [CrossRef]
4. Frank den Hond, F. Kees Boersma, Leonie Heres, Eelke H.J. Kroes, Emmie van Oirschot. 2012. Giddens à la Carte? Appraising empirical applications of Structuration Theory in management and organization studies. *Journal of Political Power* **5**, 239-264. [CrossRef]
5. Christian Ganzert, Dante P Martinelli, Ivete Delai. 2012. Intelligence systems methodology: a systemic approach to the organizational intelligence function. *Knowledge Management Research & Practice* **10**, 141-152. [CrossRef]
6. Ali E. Akgün, Halit Keskin, John Byrne. 2009. Organizational emotional capability, product and process innovation, and firm performance: An empirical analysis. *Journal of Engineering and Technology Management* **26**, 103-130. [CrossRef]
7. Abouzar Zangoueinezhad, Asghar Moshabaki. 2009. The role of structural capital on competitive intelligence. *Industrial Management & Data Systems* **109**:2, 262-280. [Abstract] [Full Text] [PDF]
8. Ali E. Akgün, Mumin Dayan, Anthony Di Benedetto. 2008. New product development team intelligence: Antecedents and consequences. *Information & Management* **45**, 221-226. [CrossRef]

Journal of OrgChange Mgmt 2007.20:272-289.