

# Organizational Intelligence; a dynamic knowledge creating activity embedded in organizational routines

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Abstract

*Traditionally Information Systems research has focused on the use of information as in providing support to decision making. The data-processing view reduces the decision maker to a rather passive recipient of information. This perspective is being challenged as organizations increasingly are concerned with the production of knowledge. Organizations pursue intelligence. This pursuit involves processing of information, interpreting environments, generation of strategies and decisions and monitoring experiences and learning from them. Organizational Intelligence (OI) is especially about the systematic processing of information from external sources in order to enhance the ability to foresee the future and to adapt in relation to the changing environment. By recognizing “a third wave” in OI, this research puts focus on the urge for systematics and continuity in intelligence work as a prerequisite for innovation based on a decentralized responsibility among knowledge workers in organizations. A perspective on intelligence based on organizational processes and routines rather than viewing intelligence as a function for information-provision is presented. A framework describing key-dimensions of the potential contribution from motivated knowledge workers engagement in organizational intelligence activities is derived from literature and an empirical investigation, pointing at suggested verification and relevance of the proposed framework is put forward.*

*Keywords: Knowledge Management Practices, Knowledge workers, Environmental scanning, Systematics, Continuity, Organizational intelligence*

## 1. Problem Area

The revival of Organizational Intelligence in the last fifteen years can be described in three different phases. The first, pre-Internet phase was about finding information in an effective and easy way. But eventually the problem reversed and in a second phase the focus concerned filtering out and creating meaning and consistency in an ever growing information flow. The concept of information overload became a reality. In the post-IT boom era a new phase is emerging, a “third wave” demanding strategic business use. The focus is rather to create a basis for innovation than the mere management of information. The quest for connecting intelligence work in organizations to strategic planning and business activities requires that more people get involved and that systematics and continuity is brought to organizational routines and structures supporting environmental scanning functionality.

### 1.1. Changing environments

Because the environment is growing in complexity and volatility, sustainable viability requires organizations to learn enough about the current and likely future conditions of the environment and to use this knowledge to change their own behavior in a timely way (Huber 2004). Increased environmental complexity generally leads to the need for more information exchange (Huber 1984). This information is, to the largest extent equally available to everybody but the created internal knowledge in organizations is exclusive. Just providing information is not the answer to better decision-making (Feldman and March 1981). Something more must be provided. We might call this

something knowledge in defining knowledge as the basis for action and decision-making. It has been proposed that knowledge constitutes the top quality asset in organizations today (Leonard 1995; Nonaka and Takeuchi 1995; Davenport and Prusak 1998; Dixon 2000). But there is a lack of understanding the micro-level process of how knowledge is enabled in firms (Ichijo, Krogh et al. 1998). *In the future environmental complexity, dynamism, and competitiveness will each be greater, and each will be increasing* (Huber 2004). Organizational environments are changing fast and according to Huber we have seen nothing yet. It will increase its pace of change. The increasing pace of environmental changes is expected to nurture the urge for faster, more timely and informed decisions in organizations.

### 1.2. Innovation for survival

Organizations must change in order to survive (Argyris and Schön 1996; Christensen 1997; Aldrich 1999; Davenport and Beck 2001; Huber 2004). There is a continuous urge for innovation. Examples have shown (Christensen 1997) that organizations can not rely on developing existing, sustainable technologies into excellence. Eventually there will appear some disruptive technology that will change the business profoundly. The management of knowledge is inseparable from the process of innovation. Innovation is regarded as the greatest payoff from knowledge management (Holsapple and Joshi 2000). Managing knowledge for its own sake adds little to organizations. The value added comes only when knowledge is applied in order to improve, change or develop specific tasks and activities. Organizational Intelligence is related to the concept of Knowledge Management. Knowledge Management regarded as a matter of supporting individual processes rather than the managing of knowledge as an object. A common misinterpretation is that a formal Organizational Intelligence system is needed, and can only be undertaken by large organizations. Small and medium-sized organizations, as well as divisions of larger organizations, need to know about environmental factors just as much as large companies. The resources they may be able to invest might be limited but that does not mean that an organizational intelligence system is impossible to implement. Regarding to Gilad&Gilad (1988), an effective system can be based on simple measures such as allocating an existing clerk to the job on part-time basis, and raising every employee's awareness to Organizational Intelligence needs (Gilad and Gilad 1988).

### 1.3. Individual environmental scanning

Intelligence processes build on individual scanning of the environment. Hamrefors (1999) propose that everybody scans their environment intuitively and constantly. The expression "*spontaneous environmental scanning*" is put forward (Hamrefors 1999). The problem is not finding information but rather to have the ability to be selective and bring attention to information and events that is of relevance to the organization. This process encompasses human judgment. *Attention is the currency of future business* (Davenport and Beck 2001). In general most organizations scan their environment in an informal and unsystematic way. They tend to recognize the environment as given and only respond when a crisis occurs.

### 1.4. Knowledge workers contribution to Organizational Intelligence

A growing part of employees in organizations can be described as knowledge workers (Drucker 1999; Scarbrough 1999), and they have the potential to develop their skills and attention in order to contribute in organizational intelligence activities as part of their daily work. Friedman, Friedman, Chapman and Baker (1997) suggests that people in the company who are likely to be collecting information on a routine basis should be identified and encouraged to think more clearly about what they are finding. Employees that by nature or by function are natural collectors share certain characteristics:

- Routine heavy exposure – high exposure to information and events outside the business in the course of their work, e.g. salesmen and purchasing people.
- Multi-departmental activities – people involved in more than one part of the organization. In small organizations this will apply to everyone. In large organizations it could be people who process information from various departments.

- Longtime personnel – employees who have been with the organization for years before the deluge of information began. These people frequently constitute the organizations internal memory.

(Friedman, Friedman et al. 1997)

Information gathering for intelligence is a cultural shift, requiring a redefinition of values to include knowledge production and making everyone part of that process (Friedman, Friedman et al. 1997). The cultural shift is needed in order to allowing employees to see their designation as an environmental scanner as a reward, a new opportunity to add value to their positions, rather than a burden. Knowledge work processes include the inputs, tasks and outputs of knowledge workers..

### 1.5. Research question

The pursuit of intelligence in organizations is traditionally viewed primarily as an information provision function. This research explores the potential of another perspective in viewing organizational intelligence as embedded in organizational structures and routines.

To what extent can routines and procedures be developed and managed in supporting the use of spontaneous environmental scanning, performed by ordinary knowledge workers?

In addressing the above formulated question we present a case study, the Bend & Weld case. The case illustrates:

- The nature of organizational routines that can be a part of an organizational intelligence system.
- The dimensions of organizational routines that promotes knowledge workers in contributing to organizational intelligence activities

## 2. Perspective on Organizational Intelligence

Friedman & Friedman (1997) propose a systematic approach on intelligence gathering in organizations. They state that an intelligence system does not mean an intelligence department but rather a system for doing intelligence. Human understanding is stated to be indispensable for turning information into knowledge and Friedman&Friedman suggests that anyone believing that technology e.g. artificial intelligence will solve the problem in the future should find a hobby, for example watching glaciers move, while waiting. Friedman&Friedman have a clear information management perspective on intelligence systems.

This is also true for Choo (2002). His perspective is manifested in the statement that information is the meta-resource that coordinates the mobilization of the other assets in order for the organization to perform. Competition has turned into an information race of discovery and learning. (Choo 2002). Choo seconds the opinion that people are the most valuable information providers.

March (2002) puts forward some problems concerning organizational learning and intelligence. Learning does not always lead to intelligent behavior. The same processes that yield experiential learning produce superstitious learning. But despite these problems there are, according to March, adequate evidence that lessons of history as encoded in routines are an important basis for the intelligence of organizations. The findings from Choudhury&Sampller(1997) states that information acquisition choices are based on specificity of the desired information. This implies that both use and acquisition of information should be performed in context by the potential users and not performed out of context by specialists in separate departments. Although there might be a need for an intelligence department its major role would probably be to provide organizational support to the function as such on an administrative level. This notion of alignment of context and design of intelligence systems is also recognized by the work of Yasi-Ardekani & Nystrom (1996)

Hamrefors (1999) puts forward the statement that all monitoring of the environmental is based on individual environmental scanning, spontaneous environmental scanning, a function that is always active among all humans. The attention directing this individual scanning is dependant on different perspectives and perspectives can be supported by organizations. Concepts like top management and organizational culture and previous and present engagement in activities are influencing different perspectives

Table 1: Theoretical frame		
Authors(s)	Key points	Contribution to OI-model
(Gilad and Gilad 1988)	Formal systematic BI system	Use of internal non-specialists.
(Friedman, Friedman et al. 1997)	Comprehensive information management system	Passive and Active intelligence gathering. Need for a systematic approach. Use of internal resources.
(March 1999)	Base of action; by choice or by rules. Ambiguity concerning action and learning and intelligence.	Urge to explore Rule-based actions. Lessons of history encoded in routines.
(Hamrefors 1999)	Spontaneous environmental scanning. Decentralized structure. Enacted environment. Perspective and attention.	Knowledge workers contribute in their enacted environment. Perspectives guide attention. Spontaneous environmental scanning.
(Choo 2002)	Information management system. Models of environmental scanning	Organization-wide information collection network.
(Huber 2004)	Firms must be congruent with their environment. Future environments will be different through accelerating change.	Increasingly complex and volatile environment. Increasing scientific knowledge – causal reasoning. Survival requires innovation.
(Choudhury and Sampler 1997)	Information acquisition and use are time and knowledge specific.	Time decreases the value of information.. Specific knowledge is required for use and acquisition of information
(El Sawy 1985)	Model for strategic scanning modes	Modes for passive and active environmental scanning
(Yasai-Ardekani and Nystrom 1996)	Relationship between organizational context and design of scanning systems	Effective scanning systems aligned with requirements of their context. Delegate intelligence responsibility to subunit managers and staff.

Table 1: Summary of contributions from Knowledge Management literature contributing to the construction of a theoretical lens.

### 3. Theoretical lens

Organizational Intelligence focuses on the use of information in promoting actions and innovation comprising all aspects of the company. Table 1 represents an overview of scholarly work that has influenced the view on Organizational Intelligence presented in this paper.

Contributions extracted from the work presented in table 1 constitute the basis for a model on Organizational Intelligence. This model comprises a set of principles that according to literature are essential in forming a successful intelligence system in organizations. The dimensions extracted from literature are presented in figure 2.

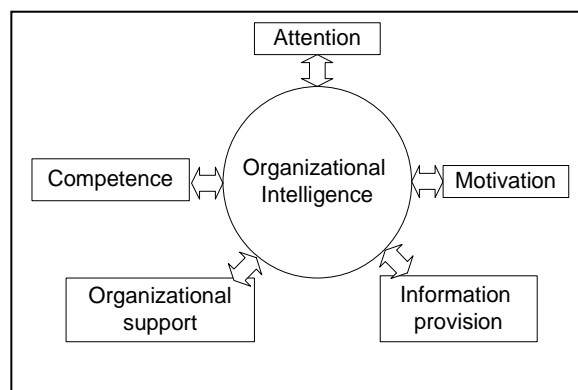


Figure 2.: Dimensions in Organizational intelligence

These dimensions were selected and used as a reference in investigating the intelligence system in a successful knowledge creating company. The aim of the case study was to look for indication of the usefulness of these dimensions.

#### **4. Methodological approach**

Interpretive research methods have gained prominence and been increasingly accepted by the Information Systems (IS) community. The growth of interpretive research includes a shift in IS research away from technological to managerial and organizational issues. And it includes a desire to study problems in the richness of their real-life setting.

The aim of all interpretive research is to understand how members of a social group, through their participation in social processes, enact their particular realities and endow them with meaning. And to show how these meanings, beliefs and intentions of members help to constitute their social action. The interpretive perspective emphasizes the importance of subjective meanings and social-political as well as symbolic action in the process through which humans construct and reconstruct their reality.

Organizations, groups, social systems do not exist apart from humans and hence cannot be apprehended, characterized, and measured in some objective or universal way.

##### **4.1. Interpretive case study**

Case research is considered to be particularly appropriate when theoretical knowledge on a phenomenon is limited or when the need for capturing context is important (Cavaye 1996). It has also been stated that a case study is highly useful and relevant when a complex management situation or process is being researched (Remenyi, Money et al. 2002).

This kind of case study is focusing on human interpretations and meanings. The empirical approach often consists of the in-depth case study. Research involves frequent visits to the field site over an extended period of time. Interpretive researchers are not saying to the reader that they are reporting facts; instead they are reporting interpretations of other peoples' interpretations. It is thus vital in order to establish some credibility to the reader, that they describe in some detail how they have arrived at their 'results' (Walsham 1995).

#### **5. The Case of Bend and Weld Ltd**

Bend and Weld Ltd. is a engineering workshop located in the south of Sweden. The company is of the kind often referred as small and medium sized companies (SME) comprising 92 employees. The reason for choosing Bend&Weld Ltd. as an object of study is that it can also be characterized as a company showing sustained growth. The company appears on a national list of growth companies called "Maratonlistan" produced by the Swedish consultancy firm Ahrens Rapid Growth in collaboration with the Swedish newspaper Svenska Dagbladet. One of the criterions in order to qualify for this list is to show an average organic growth over ten years of at least 20%. The companies on the list also have to be profitable. These kinds of companies are proposed to be appropriate, in researching successful processes for bringing in new ideas to the company.

##### **5.1. Data collection and method**

Data was primarily collected through interviews. A total of 8 interviews with 6 knowledge workers in the management staff were performed during spring 2005. Each interview lasted 2 hours and the interviewees were surprisingly cooperative in contributing with their time. Data was also collected through field observations and documentation from the company web site. The method used to elicit knowledge from the interviewees is called *responsive interviewing* (Rubin and Rubin 2005). This method is built on depth-interviews and was considered appropriate given that the data requested could not be expected to be expressed simply or briefly by the respondents. Responsive interviewing is a dynamic and iterative process consisting of a combination of main questions, follow-up questions and probes, adapting to the relationships between the researcher and the conversational partner and with analysis performed not as a one-time task but as an ongoing process.

##### **5.2. Innovation at Bend&Weld Ltd**

Bend&Weld Ltd. has undergone a major change in the last ten years and managed to survive in a declining business. Through the development of unique competencies they have managed to establish

their business in new markets with new ideas on customer relations, production strategies and constantly modernizing production by implementing advanced computerized robot technology supported by advancing management functions.

Navigating in an increasingly dynamic and changing environment Bend & Weld have succeeded to bring in new ideas and convert them to organizational routines demonstrating systematics and continuity. Bend&Weld Ltd, show that even though the line of business performed in this company, leading thought to the era of industrialism rather than the post-industrial or knowledge era, one reason why Bend&Weld Ltd. have demonstrated sustained growth over at least ten years might be a successful combination of applying modern, advanced, technology driven automation of production and applied knowledge management practices.

### 5.3. The knowledge creating company

There are some indicators showing that Bend&Weld Ltd. really is a knowledge creating company.

1. Albeit being an engineering workshop they do not produce any products of their own design to be sold on an open market. They initially did have some in-house developed products but since 1993 they call themselves professional co- contractors. The primary business concept is to become a co-contractor and problem solving partner to their customers or business partners as they prefer to name their customers.
2. An obvious logic in order to be profitable and demonstrating growth is to be able to produce services by large volumes. But Bend&Weld do not produce few products in large series. On the contrary their series of production are rather small. It might be as few as 30 items per series. The way to be able to produce large enough volumes of small series is to change production quickly. The prerequisite for achieving this relies on qualified and autonomous line workers.
3. One way of identifying companies relying on and valuing knowledge creation as an organizational asset is the presence of “knowledge-indicators”. One such indicator is the existence of knowledge-based professions. Bend&Weld Ltd. have two vocational teachers hired in order to guarantee and annually audit the level of professional skills performed by the line-workers and to guarantee appropriate recruitments.
4. The function of identifying new customers or new markets is also a knowledge dependant enterprise. In the case of established relationships between Bend&Weld Ltd. and a customer the development of new products is often in the form of project teams. Some problem or object to be developed is recognized and the process of developing new solutions is pursued in partnership. Sometimes successfully, sometimes not.

It seems fair to expect that this type of organization should demonstrate developed routines or processes aiming at bringing in new ideas from the environment.

### 5.4. Knowledge Management Practices

According to their own statement a turning point for Bend&Weld was when they decided to start the process towards ISO 9001 certification. This process was initiated from customer demand. Bend&Weld realized that they would be excluded from winning contracts if they were unable to demonstrate trustworthy routines and processes in their work on quality. It took a few years to identify and work through all processes but the process was regarded as successful. Today Bend&Weld are very proud of their quality-system and they state it to be a competitive advantage. They can demonstrate cases when they have been asked to take on contracts due to the fact that their quality system is formalized, externalized and recognized by their customers or co-contractors as they prefer to call them.

The difference is not primarily that the artifacts leaving the Bend&Weld workshop are of superior quality. There are few secrets on how to bend and weld steel. Rather the difference is their ability to act as problem solvers in relation to their co contractors, their ability to produce a multitude of products in small series with preserved quality. To deliver on time and at reasonable prizes, their system for identifying and attending “deviations”. The pursuit of eliminating deviations is a vital process and an expression often heard at the workshop, an obvious heritage from the ISO 9001 certification process. In balancing formal structures with autonomy Bend&Weld have successfully formed management methods and practices. It is these knowledge management practices that are the

object of study in order to investigate if systematic and continuous Organizational Intelligence can be developed and expressed.

Table 2. Knowledge Management practices / Organizational routines		
Dimension	Sub dimensions	Knowledge Management Practices
Attention	Culture	Norms and values expressed (ISO 14001). All for customer benefits.
	Top Management	Active and present.
Motivation	Extrinsic	Monthly feedback on formal system of bonuses. Competence matrix points influencing salary.
	Intrinsic	Active list of proposed improvements. Spontaneous suggestions for process improvements. Low employee turnover.
Competence	Visibility	Formal competence matrix. Annual competence audit.
	Development	Personal development plans. In-house vocational training staff. .
	Use	Autonomous working groups.
Information provision	Environmental scanning (passive )	Internet. Daily business newspaper. Business trade association newsletters.
	Environmental probing (active)	Personal informal networks. Formal municipality supported business network
Organizational enablers	Organizational transparency	Informal management by walking. Well-known and few overarching principles. Norms and values externalized.
	Coordinating logic	Core message; “the customer”, Formal routines expressed
	Knowledge transfer	Annual education (ISO 9001 ISO 14001) Weekly production and management meetings.

Table 2: Selected Knowledge Management practices demonstrating the dimensions of the OI model.

Table 2 demonstrates utterances of the dimensions described in the action oriented perspective on Organizational Intelligence presented in this paper. These dimensions are obviously not acting in solitude but are intervened and inter-dependant in a web of relations but the practices categorized together with a specific dimension is stated to demonstrate a significant portion of the dimension in question. In order to “improve” (another expression inherited from ISO 9001 certification process) these processes, information from the surrounding environment are more or less a prerequisite.

## 6. Discussion and Conclusions

In this paper we propose an action oriented perspective on Organizational Intelligence (OI). In expanding OI not being just a matter of information provision and information management we propose that intelligence can be expressed and developed in accordance with knowledge management practices expressed in organizational routines and processes. In the case of Bend&Weld we suggest that we have demonstrated the existence of effective organizational routines that could be developed further into forming the basis of a more formal organizational intelligence system. One very clear observation from the case of Bend&Weld is that environmental scanning and intelligence gathering is performed with some systematic and continuous ambitions but the actions are not labeled as intelligence activities. There is a lack of awareness towards the intelligence work actually performed and a lack of coordination between the different management functions e.g production planning, procurement, sales etc. Building on the existing structures of knowledge management practices we propose that intelligence activities could be expressed in order to be more visible. In analogy with the pursuit of “improving processes”, which is well established in the organizational culture of Bend&Weld a more formal system of organizational intelligence could be developed. By recognizing the element of environmental scanning as important and by assigning responsibilities for intelligence work, maybe even include some intelligence oriented skills into the competence matrix, a more formal system could evolve. A need for a more formal system and an expressed respect for the concept of environmental scanning in dealing with the uncertainties of the potential impact of events in the organizational environment are expressed and present at Bend&Weld Ltd..

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