



Nolan Norton Institute



Putting the Knowing Organization to Value

White Paper, August 1998

Preface

All over the world organizations are moving from the industrial age to the information age. As part of this process, business and IT concepts seem to be going through as much change as the organizations themselves. Against this background it is of vital importance to exchange ideas and visions about knowledge management, and to discuss our experiences with it.

The intention of the Round Table Conferences organized by Nolan Norton Institute, the research discipline of Nolan, Norton & Co. is to facilitate this kind of exchange. The material presented here

summarizes a discussion between managers of leading Dutch companies, management consultants and a prominent researcher in the field of knowledge management, professor Chun Wei Choo of the University of Toronto.

Further, the subject of the discussion is outlined in a summary of a KPMG Management Consulting survey, as well as in professor Choo's article 'The Knowing Organization: A Process Model of Knowledge Management', in which he describes a knowledge management process model.

Round Table Conference

Putting the Knowing Organization to Value

Summary of the discussion,

Wittenburg-Castle, Wassenaar, 10 June 1998

Participants

H.C. Zedlitz

C.K. Haasnoot

G.J. Kramer

A.A. Roell

P.M.A. Ribbers

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R.M.M. Fonville

Ph.J. Idenburg

H. van Lente

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J.T.M. van der Zee (Chairman)

Fellow Nolan Norton Institute

Fortis

Fugro

ING Group

Katholieke Universiteit Brabant

NCM

KPN Telecom

Philips Semiconductors

Zurich

KPMG-Inspire Foundation

KPMG Knowledge Management

Nolan, Norton & Co.

Nolan Norton Institute

Introduction

Is knowledge management here to stay?

Nowadays 'knowledge management' is a fashionable topic in business and management circles. Numerous books and articles are published, seminars are held and the first Chief Knowledge Officers are installed. The popularity of the issue has led some to believe that knowledge management is a fad like many others, and that it will soon be forgotten, to be replaced by the next 'hot' business topic.

This scepticism is deepened by the disappointing results of the introduction of information systems, the difficult struggles everywhere with intranets, and the limited use that people make of databases. Indeed, there have been great expectations, and they have failed to materialize. Nevertheless, we have to face the fact that our organizations and our economy are becoming more knowledge intensive. Undeniably, knowledge is of strategic importance to services and products and to their distribution. Some even say that knowledge is becoming the primary production resource, before raw materials, labour and capital. Knowledge management may not be a guarantee for instant success, but we cannot do without it anymore.

Yes, knowledge management is here to stay, but we need a better understanding of knowledge and the way it helps firms to create value. We invited professor Choo, author of *The Knowing Organization*, to describe the state of the art of knowledge management. What do we know about how to deal with knowledge in organizations? Professor Choo integrates insights and lessons from three business areas that are seldom studied in relation to one another. This makes the pieces

of the puzzle fall into place. When dealing with knowledge management in the broadest sense we have to address the following fundamental questions:

- How do we *make sense* of what is happening, both in our organizations and outside?
- How do we *create knowledge* that is adequate?
- How do we improve *decision making*?

Clearly, this involves more than the IT department. It relates to the 'knowing society', the 'knowing organization' and the 'knowing (networking) worker'. Hence, at the Wittenburg Round Table Conference four statements were discussed:

- 1. The knowing society: as a result of the recognition of the value of knowledge, markets will change radically.**
- 2. The knowing, networking organization: in response to the shift towards a knowing economy, companies will have to form strong alliances with their clients, suppliers and competitors.**
- 3. The knowing, networking worker: a knowing, networking organisation induces a radical change in the roles, competencies and responsibilities of its employees.**
- 4. The transformation from the 'IT Era' to the knowledge based 'Network Era' can and should be managed.**

In the following pages the discussion triggered by these statements is outlined, interspersed with comments and reactions of the participants.

Statement 1

The knowing society: As a result of the recognition of the value of knowledge, markets will change radically.

Elaborating on this statement, the chairman pointed out that knowledge is becoming a major key in helping managers 'sense' and survive within a 21st century company. Knowledge quality and the way it is managed are therefore of prime importance. The era of the industrial economy has passed and the 'knowledge economy' is a fact. This sets new rules for the way we do business. Uncertainty is of the order of the day - and of the next day. New markets will emerge, new knowledge intensive products and services will arise. Customers increasingly ask for 'intelligent' products and services, of which the information and knowledge component will prove to be the discriminating factor. In the knowledge economy, the value-adding potential of a company depends on its strengthening its competitive position by using 'embedded' knowledge components in its service and product offerings. In the knowledge economy, products don't weigh a ton - they are the products of the human mind rather than of the production line. "We have moved from a heavyweight society, to a weightless society", the chairman quoted Tissen¹. Creating knowledge based propositions which focus on customers and society at large seems to be the only way for an organization to create value for its stakeholders.

R.H. Alsen, KPN Telecom: "Creating added value is established by focusing, not on the visible part of the product, but on the knowledge-intensive services associated with the finishing of the product."

Even commodity products, which are tangible products and contain little embedded knowledge, seem to become more and more knowledge intensive. Examples of the knowledge intensity of these products are found in the the 'systems' and distribution channels used to package and transport them and to sell them globally.

R.M.M. Fonville, Philips Semiconductors: "Creating value based propositions for commodity products will certainly be possible, but more limited than for 'intelligent' products. Distribution channels are probably the main theatre for doing so."

No company has done more to show how the web overturns conventional assumptions about distribution and marketing than Amazon.com. Out of the blue this virtual bookstore challenged the position of well-established booksellers like Barnes & Nobles. The secret of Amazon's success is its building a business on a 'sell all, carry few' strategy. Amazon.com provides its customers with a 'surprisingly' knowledge-intensive service: on the basis of your past choice of books, a personal profile of your preferences is made. Amazon.com is then able to present new books on the basis of your and your peers' past choices and buying behavior.

C.W. Choo, University of Toronto: "The knowledge density of products and services depends on two important ingredients, namely the amount of knowledge that is embedded in the product or services and the impact of knowledge on making customers act and operate more intelligently."

The participants then focused on how to generate better knowledge for customers. The main challenge was found to be: how to put knowledge into the products of the organization to create a difference, and how to manage this process. The participants noted that managing the knowledge, embedded in a competitive strategy, will create the competitive advantage.

C.K. Haasnoot, Fortis: "Many firms see distribution as peripheral to their competitive strategy. Choosing the right distribution channel for knowledge proves to be a core competence in our business. Knowledge brokers are an increasing successful kind of salesmen. They are able to create value out of the current information overflow."

¹ Tissen, R., Andriessen, D., Lekanne Deprez, F., *Value-Based Knowledge Management, Creating the 21st Century Company: Knowledge Intensive, People Rich*, Addison Wesley Longman, 1998.

Statement 2

The knowing, networking organization: In response to the shift towards a knowing economy, companies will have to form strong alliances with their clients, suppliers and competitors.

Managers engage in (strategic) alliances for a number of reasons:

- *To reduce costs:* all else being equal, organizations with higher costs lose market share, their profit margins erode, and they have less capital available for investments (innovation and acquisitions).
- *To gain access to the partner's resources:* alliances enable an organization to develop or sell a product or service today - instead of tomorrow - because a partner has it immediately available.
- *To build flexibility:* the globalization of knowledge has made it difficult to make significant investments in all specialized areas; by combining research and development efforts, new knowledge can be transformed into valuable products and services.

The need for both existing and new knowledge will drive companies towards the Network Era. Unfortunately, knowledge often isn't available in a 'structured' and explicit fashion. No single organization has all the competence, intelligence and knowledge to operate, improve and innovate. Therefore, companies will be less and less able to fulfil the demands of their clients without contributions from the core activities and resources of other organizations, be they clients, suppliers or competitors. Alliances of various kinds have given rise to the 'stateless corporation', in which people and

resources move freely across international borders. Connectivity is stretching the linkage to the far corners of the globe. By creating knowledge based networks an organization will be able to provide value to its stakeholders. The chairman mentioned the conclusion of De Geus² that "intellectual property lies at the center of the modern company's economic success or failure".

This can be seen in many organizations and industries. Companies like Microsoft own nothing of value except knowledge. Fighting to defend and extend the domain of their intellectual property is an important source of sustainable competitive advantage.

However, teaming up with competitors ('co-opetition') seems to be the next competitive frontier for knowledge based network organizations. The discussion now focused on the issue of 'how much to share'. It became clear that a balance must be struck between sharing and protecting knowledge.

C.K. Haasnoot, Fortis: "The Silicon Valley model is very interesting: co-optition, i.e. collaboration and competition at the same time. The numerous possible combinations of partners create uniqueness."

G.J. Kramer, Fugro: "I believe too much attention is paid to sharing knowledge and not enough to protecting it."

C.K. Haasnoot, Fortis: "Everybody talks about sharing knowledge, but nobody wants to receive it - a real 'not invented here' syndrome, which prevents people from changing their way of doing things."

² Geus, de A.P., *Planning as Learning*, Harvard Business Review, March-April, 1988.

Statement 3

The knowing, networking worker: The knowing, networking organization induces a radical change in the roles, competencies and responsibilities of its employees.

The chairmain pointed out that, thanks to information and communication technology, most employees already have the opportunity to work in non-traditional workplaces, away from their employer's office and in direct contact with the customer. Laptops, cellular phones, wireless modems and voice mail change the work environment for many knowledge professionals. These tools have extended their working day. In effect they have created a *portable assembly* line for the 1990s that allows knowledge professionals to remain on-line in planes, cars, and at home. The knowledge economy sees the birth of the 'assembly-on-line workers'. However, not all companies are succesful in implementing these approaches.

G.J. Kramer, Fugro: "The Dutch high-tech company Getronics stopped its pilot study of teleworking. There were too many distractions, making it impossible for employees to work at home. The low productivity of software developers became unacceptable."

On the other hand, the simple act of removing walls that separate people in traditional offices often fosters teamwork. As a result, relations between employees and employers are increasingly managed by mutually agreed outcome or output indicators, rather than by presence. It is expected that the rise of the knowing, networking organization will accellerate this phenomenon. Many of today's workers will find themselves in a position where they are no longer employees but knowledge professionals, who advise their 'used-to-be-employer' and possibly other companies as well. In short, the knowing, networking worker will apply his knowledge on behalf of several organizations concurrently, and will be responsible for

the maintenance of his competencies and the employability of his knowledge.

Focusing on the knowing, networking worker, the participants made some remarkable observations about the debit side for employers, for example on the demands of employees for compensation, incentives and rewards.

P.M.A. Ribbers, Katholieke Universiteit Brabant: "Many organizations, universities etc. are on the wrong track. The performance appraisal system forces people to act and operate as individuals ('lonely bulls')."

This requires an awareness of the damage a knowledge worker can inflict on a company. If a key knowledge worker leaves, the company loses more than just that employee; it loses the informal network this employee has constructed around himself, and it is in danger of losing clients who see their relation as not necessarily with the company but rather with the individual concerned³.

According to the participants it is very important, after finding the right people, to make their knowledge explicit. Converting tacit knowledge into explicit knowledge involves finding a way to express the inexpressible, according Nonaka & Takeuchi⁴. They stress, as did the participants of the Round Table Conference, the importance of creating a knowledge team with different knowledge styles and ambiguous targets (open-ended, and susceptible to a variety of different or even conflicting interpretations). Especially the internal and cross-border cultural issues are important.

C.K. Haasnoot, Fortis: "We face this challenge in our company: how to transform tacit knowledge into explicit knowledge. Right now, when someone retires, with him knowledge leaves the company - this considers IT people as well as other professionals. Unless they have documented their experience and skills, a lot of intellectual capital⁵ just walks out the door."

³ Ibid. 1

⁴ Nonaka, I., Takeuchi, H., *The Knowledge-Creating Company*. Oxford University Press, 1995.

⁵ Roos, J., Roos, G., Edvinsson, L., Dragonetti, N., *Intellectual Capital, Navigating in the new business landscape*. Macmillan Business Press, 1997; Dutch report: *Adviesraad voor het Wetenschaps- en technologiebeleid, Onschatbare rijkdom aan kennis, Javastraat 42, Den Haag, 1998.*

Statement 4

The transformation from the 'IT Era' to the knowledge based 'Network Era' can and should be managed.

The demands of the knowledge based 'Network Era' have much in common with those of the learning organization. Organizations have to be more open and flexible. Chris Argyris once introduced the notions of single and double loop learning. Single loop learning is quite common: it involves small adaptations in the day-to-day activities of organisations. Double loop learning appears to be much more difficult. It aims at taking a step back and reflecting on underlying assumptions, beliefs, conventions and norms, which is not easy. A dilemma here is that good communication rules, such as protecting individual feelings, may block double loop learning. Learning is thus closely related to unlearning: doing away with old practices that no longer suffice. At this point it was discussed how to appreciate the value of tacit knowledge.

Ph.J. Idenburg, Zurich: "It is more efficient to have a regular inflow of new, fresh people than to try to unlearn what is no longer relevant and adequate. As a consequence, the average outflow at Zurich is now 10 %. The time to unlearn is no longer available, and the tacit knowledge of our workers is quickly outdated."

Several participants did not agree. They warned that one should be very careful, that one should not underestimate the value of tacit knowledge and skills which at first sight seem not to add much value. The 'year 2000 problem', for instance, now calls for many more specialists in the Cobol programming language

than are available, while until recently knowledge of Cobol was regarded as obsolete.

Ph.J. Idenburg, Zurich: "It is more a matter of changing the organizational culture than of introducing technical facilities and rules. The question is how to make a culture that is not stable anymore. We need bridgebuilders to do this."

G. Grossman, NCM: "Ten years ago HRM was a hype and now everybody has it included in the list of management tasks. Once knowledge management is recognized as crucial, it will become an ordinary part of management. Then it will disappear as a hot topic."

In the old days management had to worry about manufacturing products and rendering services. In the new knowledge economy management has to make sense. Without curiosity about what is happening in the environment, organizations cannot survive in this new era.

A.A. Röell, ING Group: "The scanning function will grow in importance. Big players often do this by buying small firms that have explored some new direction and have shown that it is successful."

P.M.A. Ribbers, Katholieke Universiteit Brabant: "Not only is the environment changing very rapidly, there is also an incredible increase in the amount of information that is available. It has been estimated that we have now 10,000 times more information than 10 years ago. Clearly, it is necessary to organize one's scanning of the supply and to limit one's intake of information in a clever way."

Conclusions

- In the knowing society all markets will change rapidly, not only those of 'intelligent' products.
- The created value of an organization will become more and more 'knowledge dense'. The knowledge density of organizations will be their competitive advantage in the knowledge economy.
- Intellectual property is a crucial source of sustainable competitive advantage.
- Alliances enable an organization to gain the necessary access to the resources needed. Nevertheless, organizations must strike a balance between sharing and protecting knowledge.
- Making knowledge explicit in the organization is necessary in this time of non-traditional workplaces and knowing, networking workers.
- The challenge organizations face no longer lies in making products for traditional markets but in making sense in rapidly changing markets.
- Learning organization principles should be applied to manage the transformation to the knowledge based Network Era.

New survey shows sea change in attitude towards knowledge management

KPMG Management Consulting research reveals: 'Half of the companies in the UK suffer significant damages from staff turnover'.

Businesses in the UK have undergone a sea change in their perceptions of knowledge management, according to a new survey¹. The results of research published in June '98 by KPMG Management Consulting in the UK show that only 2 % of the respondents believe knowledge management to be a fad that will soon be forgotten (in direct contrast with other studies conducted a year before²) and that almost half of the organizations questioned feel they have a knowledge management initiative in place. The same survey also highlights the cost of failing to use knowledge effectively. Almost half of the companies have suffered significant damage from losing key staff, with 43 % experiencing impaired client or supplier relations and one in ten facing a loss of income because of the departure of a single employee. The survey includes the following findings:

- 43 % of the respondents claim that the loss of a single employee has damaged their company's relations with a key client or supplier;
- 13 % of the respondents state that the departure of a single key staff member has resulted in significant income loss;
- 49 % of the respondents state that knowledge of the best practice in a specific area of operations has been lost when an employee left the company.

David Parlby, partner in charge of knowledge management at KPMG Management Consulting in the UK, comments: "This survey demonstrates that knowledge management is here to stay. The cynicism that greeted earlier research (in which almost a third of the respondents perceived knowledge management to be a transient fad²) has been replaced by a belief that this is the way of the future. However, too many companies are still suffering the ill-effects of poor

knowledge organization. A large number of organizations continue to rely upon invaluable knowledge (including that concerning customers, markets and employees' skills) held solely in people's heads. Consequently, when a key employee leaves, so does his experience and expertise, which can be disastrous for the organization as a whole."

David Parlby continues: "Technology on its own does not constitute a knowledge management project, nor is technology necessarily always the best means of storing information - on occasions, there is no better alternative than in the individual's mind. However, it is fair to say that technology is a key component in any knowledge management initiative, and an area in which many companies currently fail to capitalize on their investment. Many organizations fail to store and disseminate information electronically. But surprisingly, this is not because of a lack of resources."

The new survey dispels the popular belief that knowledge is not shared within companies because there is no way of doing so, or because people largely resist sharing their knowledge with others. According to the survey, the technology that facilitates knowledge management is already in place: 68 % of the respondents currently use document management systems, 66 % have implemented an intranet and 36 % possess a data warehouse.

However, David Parlby believes, the survey does show that companies are experiencing difficulties with knowledge management initiatives primarily because individuals are unable to spare the time required to make knowledge sharing a reality. "Almost half of the respondents believe that people in their organization want to share information but simply do not have the time. Surprisingly, the lack of time is considered a greater barrier to knowledge sharing than cultural issues, which are regularly cited as blighting such projects. Indeed, only 16 % of the respondents feel that individuals are unwilling to

¹ *Knowledge Management Research Report 1998. The fieldwork for this survey was conducted by the Harris Research Centre among companies with a turnover greater than £200 million. More than 100 companies participated, with the eligible respondent being the Finance Director, the Chief Executive or the Marketing Director. For further information: KPMG UK World Wide Web address: <http://www.kpmg.co.uk>*

² *The Knowledge Barrier, by the Information Systems Research Centre of Cranfield School of Management, September 1997.*

share their own knowledge.” “Companies must make knowledge sharing a priority, re-evaluating their incentive structures to ensure that sharing information is adequately rewarded. But they must also allow employees more time to carry out this vital task. By sharing knowledge effectively, more time is freed for productive tasks - creating a kind of ‘virtuous circle’. For organizations that continue to be lean and fit in the information age, this can give an invaluable competitive edge.”

Other key findings of the report include:

- 43 % of the respondents consider their organisation to have a knowledge management project in place;
- only 26 % of these projects have reached the implementation stage, with the majority still in the investigation, review and preparation stages;
- most companies with a knowledge management project in place have not yet established a strategy, as indicated by the lack of both allocated budget and board level responsibility for the initiative.

The knowing organization: a process model of knowledge management

The expert perspective of Chun Wei Choo

Organizations use information in the three arenas of sensemaking, knowledge creation, and decision making. Organizational knowing emerges when the three modes of information use are connected to each other to constitute a larger network of processes through which the organization constructs shared meanings about its actions and identity; discovers, shares, and applies new knowledge; and initiates patterns of action through search, evaluation, and selection of alternatives.

The knowing organization possesses information and knowledge that confer a special advantage, allowing it to manoeuvre with intelligence, creativity, and occasionally, cunning. The knowing organization is well-prepared to sustain its growth and development in a dynamic environment. By sensing and understanding its environment, it is able to prepare for adaptation early. By marshalling the skills and expertise of its members, it is able to engage in continuous learning and innovation. By applying learned decision rules and routines, it is primed to take timely, purposive action. At the heart of the knowing organization

is its holistic management of the information processes that underpin sensemaking, knowledge-creating, and decision-making.

Sensemaking is precipitated by a change or difference in the environment that creates discontinuity in the flow of experience engaging the people and activities of an organization. These discontinuities provide the raw data from the environment which have to be made sense of. The sensemaking recipe is to interpret the environment through connected sequences of enactment, selection, and retention'. In enactment, people actively construct the environments which they attend to by bracketing, rearranging, and labelling portions of the experience, thereby converting raw data from the environment into equivocal data to be interpreted. In selection, people choose meanings that can be imposed on the equivocal data by overlaying past interpretations as templates to the current experience. Selection produces an enacted environment that is meaningful in providing cause-effect explanation of what is taking place. In retention, the organization stores the products of successful

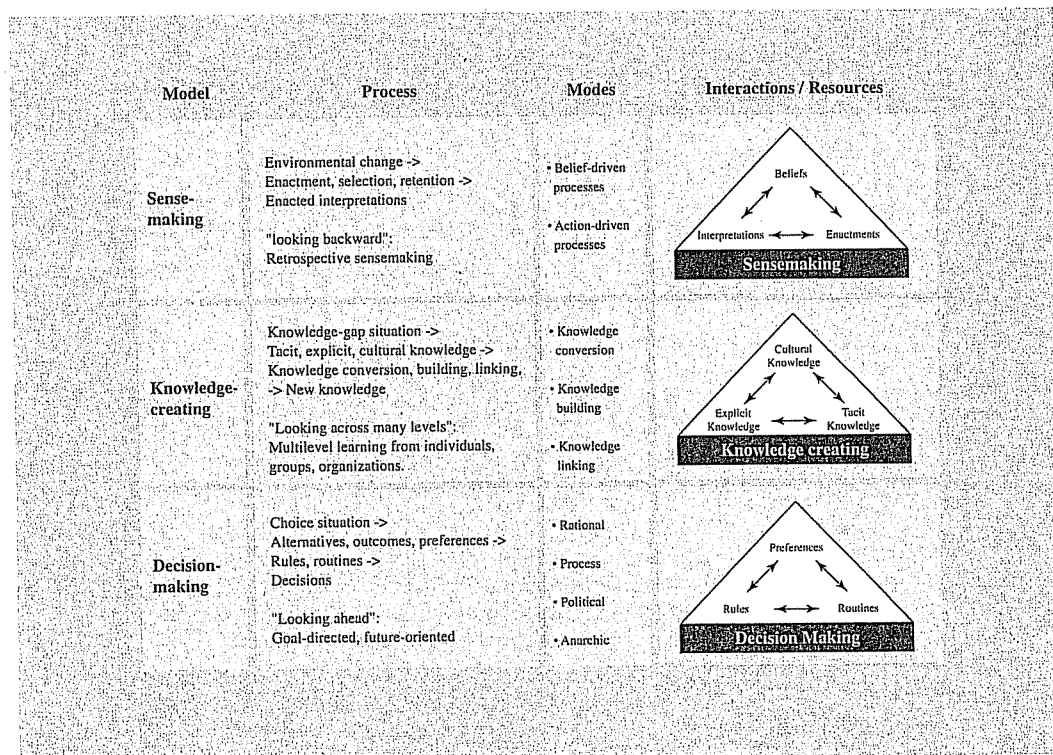


Figure 1. Sensemaking, Knowledge Creating, and Decision Making

sensemaking (enacted or meaningful interpretations) so that they may be retrieved in the future.

Organizational sensemaking can be driven by beliefs or by actions¹. In belief-driven processes, people start from an initial set of beliefs that are sufficiently clear and plausible, and use them as nodes to connect more and more information into larger structures of meaning. People may use beliefs as expectations to guide the choice of plausible interpretations, or they may argue about beliefs and their relevancy to current experience especially when beliefs and cues are contradictory. In action-driven processes, people start from their actions and grow their structures of meaning around them, by modifying the structures in order to give significance to those actions. People may create meaning in order to justify actions that are visible, deliberate, and irreversible (committing actions), or they may create meaning in order to explain actions that have been taken to induce changes in the environment (manipulating actions).

Knowledge creating is precipitated by a situation which identifies gaps in the existing knowledge of the organization or the work group. Such knowledge gaps stand in the way of solving a technical or task-related problem, designing a new product or service, or taking advantage of an opportunity. An organization possesses three kinds of knowledge: tacit knowledge embedded in the expertise and experience of individuals and groups; explicit or rule-based knowledge codified in organizational rules, routines, and procedures; and cultural knowledge expressed in the assumptions, beliefs, and norms used by members to assign value and significance to new information or knowledge. New knowledge is created by knowledge conversion², knowledge building³, and knowledge linking^{4,5}. In *knowledge conversion*², the organization continuously creates new knowledge by converting

between the personal, tacit knowledge of individuals who develop creative insight, and the shared, explicit knowledge by which the organization develops new products and innovations. Tacit knowledge is shared and externalized through dialogue that uses metaphors and analogies. New concepts are created, and the concepts are justified and evaluated according to its fit with organizational intention. Concepts are tested and elaborated by building archetypes or prototypes. Finally, concepts which have been created, justified and modeled are moved to other levels of the organization to generate new cycles of knowledge creation. In *knowledge building*³, the organization identifies and nurtures activities that build up knowledge which strengthens the organization's distinctive core capabilities, enabling them to grow over time. These knowledge building activities are: shared problem solving, experimenting and prototyping, implementing and integrating new processes and tools, and importing knowledge. Individuals with diverse signature skills work together on solving a problem. Through experimentation and prototyping, the organization extends its existing capabilities, and builds new ones for the future. Successful implementation of new tools and processes requires users and technology to mutually adapt and to complement each other. Knowledge about the technology as well as the market is imported from outside the organization and absorbed. In *knowledge linking*⁴, the organization forms intimate learning alliances with other organizations in order to transfer knowledge that is embedded in the specialized relationships, work cultures and operating styles of the partner organization. Wikstrom and Normann⁵ see an organization as a knowledge-creating value star at the center of many incoming flows of knowledge from suppliers, customers, and other partners. Knowledge is transformed into value not only within the organization, but also through knowledge-based interactions with its customers, suppliers, and other partners.

¹ Weick, K.E., *Sensemaking in Organizations*, Thousand Oaks, CA: Sage Publications, 1995.

² Nonaka, I., Takeuchi, M., *The Knowledge Creating Company*, Oxford University Press, 1995.

³ Leonard-Barton, D., *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation*, Boston, MA: Harvard Business School Press, 1995.

⁴ Badaracco, J.L., *The Knowledge Link: How Firms Compete Through Strategic Alliances*, Boston, MA: Harvard Business School Press, 1991.

⁵ Wikstrom, S., Normann, R., *Knowledge and Value: A New Perspective on Corporate Transformation*, London, UK: Routledge, 1995.

Decision making is precipitated by a choice situation, an occasion in which the organization is expected to select a course of action. Completely rational decision making involves identifying alternatives, projecting the outcomes of each alternative, and evaluating the alternatives and their outcomes according to known preferences or objectives. These information gathering and information processing requirements are beyond the capabilities of any organization or any individual. Depending on the level of goal ambiguity or goal conflict, and the level of technical uncertainty, an organization copes by adopting one of four modes of decision making. In the *boundedly rational mode*, when goal and technical clarity is relatively high, choice is simplified by performance programs⁶ and standard operating procedures⁷ which execute the search and decision rules and routines that the organization has learned. In the *process mode*⁸, when goals are strategic and clear but the technical methods to attain them are uncertain, decision making becomes

a dynamic process marked by many interruptions and iterations. Nevertheless the process shows a general structure: it begins with the recognition and diagnosis of the problem, followed by development of alternatives through searching for ready-made solutions or designing custom-made ones, and ends with the evaluation and selection of an alternative that has to be authorized or approved. In the *political mode*⁹, when goals are contested by various interest groups and technical certainty is high within groups, decisions and actions are the results of the bargaining among players pursuing their own interests and manipulating their available instruments of influence. Political decision making may then be likened to game-playing, in which players take up positions, stands, and influence, and make their moves according to rules and their bargaining strengths. In the *anarchic mode*¹⁰, when goal and technical uncertainty are both high, decision situations consist of relatively independent streams of problems, solutions, participants, and choice

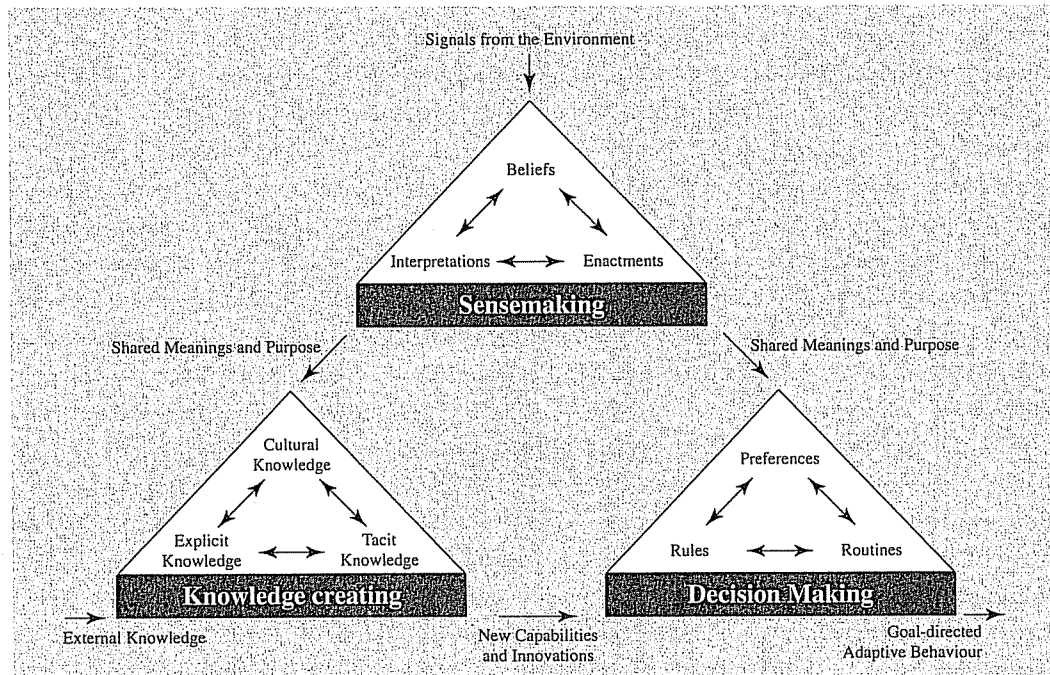


Figure 2. The Organizational Knowing Cycle

⁶ March, J.G. and Simon, H.A., *Organizations*, 2nd ed. Oxford, UK: Blackwell, 1993.

⁷ Cyert, R.M., March, J.G., *A Behavioral Theory of the Firm*. 2nd ed. Oxford, UK: Blackwell, 1992.

⁸ Mintzberg, H., Raisinghani, D., and Théorét, A., *The Structure of "Unstructured" Decision Processes*, *Administrative Science Quarterly* 21, 1976.

⁹ Allison, G.T., *Essence of Decision: Explaining the Cuban Missile Crisis*, Boston, MA: Little Brown, 1971.

¹⁰ Cohen, M.D., March, J.G., and Olsen, J.P., *A Garbage Can Model of Organizational Choice*, *Administrative Science Quarterly* 17, 1972.

opportunities. A decision happens through chance and timing, when problems, solutions, participants, and choices coincide; and when solutions are attached to problems, and problems to choices by participants who have the time and energy to do so.

The Organizational Knowing Cycle

In the knowing cycle, a continuous flow of information is maintained between sensemaking, knowledge creating, and decision making, so that the outcome of information use in one mode provides the elaborated context and the expanded resources for information use in the other modes, as shown in Figure 2.

Through sensemaking, organizational members enact and negotiate beliefs and interpretations to construct shared meanings and common goals. **Shared meanings and purpose** are the outcome of sensemaking, and they constitute the framework for explaining observed reality, and for determining saliency and appropriateness. Shared meanings and purpose help to specify a shared organizational agenda, a set of issues that people in the organization agree on as being important to the well-being of the organization. While they may not agree about the content of a particular issue, and may adopt diverse positions on how it should be resolved, nevertheless there is collective recognition that these issues are salient to the organization. Shared meanings and purpose also help to define a collective organizational identity, or perhaps more accurately, a set of multiple identities, since an organization assumes different identities in different situations. Defining an organizational identity establishes norms and expectations about the propriety, accountability, and legitimacy of the organization's choices and behaviors. A framework of shared meanings and purpose is therefore used by organizational members to assess consequentiality and appropriateness, and to reduce information ambiguity and uncertainty to a level that enables dialogue, choice and action making. Where messages from the external environment are highly equivocal, shared meanings reduce ambiguity by helping members to select plausible interpretations.

Where messages from the external environment are highly incomplete, shared meanings reduce uncertainty by supplying assumptions and expectations to fill in the voids. Shared meanings need to be continuously updated against new events and conditions. By allowing ambiguity and diversity in interpretations, an organization can constantly monitor its shared meanings against the environment to ensure that they are still valid.

Within the framework of its constructed meaning, agenda, and identity, the organization exploits current specializations or develops new capabilities in order to move towards its vision and goals. Movement may be blocked by gaps in the knowledge needed to bridge meaning and action. Gaps in knowledge may be about something that is lacking (such as a material with the desired properties, or a technique to perform an action); or they may be about something that is obstructing the way ahead (such as a problem to be solved, or an obstacle to be overcome). When the organization experiences gaps in its existing knowledge or limitations in its current capabilities, it initiates knowledge seeking and creating, set within parameters derived from an interpretation of the organization's goals, agendas, and priorities. Organizational members individually and collectively fabricate new knowledge by converting, sharing and synthesizing their tacit and explicit knowledge, as well as by cross-linking knowledge from external individuals, groups and institutions. The outcome of knowledge creating are **new capabilities and innovations** that enhance existing competencies or build new ones; generate new products, services, or processes; or extend the range of viable organizational responses to a problem situation. The value of new knowledge is assessed locally by its ability to solve the problem at hand, as well as generally by its ability to enhance the organization's capabilities in the long run. New knowledge enables new forms of action but also introduces new forms of uncertainty. The risks and benefits of untested innovations and unpractised capabilities are compared and evaluated by invoking rules and preferences in the process of organizational decision making.

Shared meanings and purposes, as well as new knowledge and capabilities converge on decision making as the activity leading to the selection and initiation of action. Shared meanings, agendas and identities select the premises, rules, and routines that structure decision making. New knowledge and capabilities make possible new alternatives and outcomes, expanding the repertoire of available organizational responses. By structuring choice behavior through premises, rules and routines, the organization simplifies decision making, codifies and transmits past learning, and proclaims competence and accountability. Rules and routines specify 'rational' criteria for the evaluation of alternatives, 'legitimate' methods for the allocation of resources, and 'objective' conditions for distinguishing between normal states and novel situations that may necessitate the search for new rules.

Over time, the organization has learned and codified a large number of rules and routines, so that choosing which rules to activate for a specific choice making scenario is itself problematic. Shared meanings and understandings about the nature and needs of a particular situation are used to guide rule activation. Shared interpretations help select which rules to apply by answering the questions "What kind of situation is this?" and "What rules do we have for dealing with this type of situation?" Shared interpretations may also select rules according to the criterion of appropriateness – "What kind of organization are we? What would be appropriate behavior for an organization like ours in a situation like this one?"

Sometimes shared interpretations indicate that the situation is novel, where none of the learned rules seem to apply. When rules break down, the organization attempts to make new meaning in time to initiate action, effectively prototyping new rules to prompt choice making. The end result of this interaction between shared meaning (in interpretations and understandings) and shared learning (in rules and routines) is the execution of a pattern of actions that simultaneously constitutes the organization's attempt to move towards current goals and maintain current identity, as well as its attempt to adapt to changed conditions in the environment. In this sense, the outcome of decision making is behavior that is both goal-directed and adaptive.

While each organization adjusts its behavior to perceived changes in the environment, its responses are diluted and diffracted by the concurrent actions of other actors that participate in the same arena. Thus each organization is reacting to the actions of other organizations that are also reacting to it. The resultant meshwork of interactions configure new patterns and new conditions that pose fresh ambiguities and uncertainties. A continuous stream of new events and equivocal cues necessitates iterative cycles of information processing. Where meanings or purpose change as a result of reinterpreting the environment, or where rules or routines are altered as a result of acquiring knowledge and understanding, the organization is adapting to variation and feedback in its environment.



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