
Care in Knowledge Creation

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The rapid creation and diffusion of knowledge within and between companies has become a top priority issue on managers' agenda. Recognizing that knowledge can constitute a source of sustainable competitive advantage, managers turn to tools and approaches to visualize, mine, apply, refine, and transfer the knowledge and experience available to the company.¹ The company's overall performance depends on the extent to which managers can mobilize all of the knowledge resources held by individuals and teams and turn these resources into value-creating activities.² Value creation can take place through creation of new knowledge comprising at least five phases:

- the initial sharing of knowledge, experience, and practices among team members;
- the effective creation of new service and product concepts based on this shared knowledge;
- the justification of these concepts deeply rooted in, for example, market studies, trend studies, focus interviews, benchmarking, or company strategy;
- the building of a prototype product or initial service offering; and

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- the global leveraging of knowledge, concepts, prototypes, and offerings throughout the company.³

It all seems easy on paper, but how do managers make knowledge creation work in practice? The challenge is intimidating, because knowledge is so intimately bound up with people. Success with “managing knowledge” will therefore ultimately depend on a manager’s sensitivity to people issues.

“Knowledge” from Two Perspectives

There are currently two major views on the nature of knowledge. The “cognitivist perspective” is the most firmly established and well known. It originating during the “cognitive revolution” in the early 1950s when tremendous progress occurred in computer science, systems theory, psychology, and neuroscience. The groundbreaking work of Herbert Simon, Allen Newell, Warren McCulloch, Marvin Minsky, and others provided insights into the physical structure of the brain and the workings of cognitive processes. The cognitivists developed formal models of the cognitive system as a machine for information processing and logical reasoning.⁴ Knowledge was considered to be representations of the world that consist of a number of objects or events, and the key task of the brain (or any cognitive system) was to represent or model these as accurately as possible. Knowledge was universal; two cognitive systems should achieve the same representations of the same object or event. “Learning” meant the development of increasingly complete representations, and one knew that the cognitive system worked when its representations corresponded to the objects or events “out there.” To the cognitivist, knowledge was explicit, capable of being encoded and stored, and easy to transmit to others.⁵

Based on new insights in neurobiology, cognitive science, and philosophy, the “constructionist perspective” views cognition not as an act of representation, but as an act of construction or creation.⁶ Humberto Maturana and Fransesco Varela, two Chilean biologists, have suggested that cognition is a creative act of bringing forth a world. Because knowledge resides in our bodies and is closely tied to our senses and previous experience, we will come to create the world in ways that are unique to ourselves. Thus, knowledge is not universal, and the constructionist does not pay much attention to comparing various representations. Rather, she knows that the cognitive system works when knowledge allows for effective action. To the constructionist, some knowledge is explicit, but some is also tacit, highly personal, not easily expressed, and therefore not easy to share with others. Tacit knowledge involves physical skills, such as putting the movements together in a high-precision luxury watch, as well as perception skills, such as interpreting a complex seismic readout of an oil reservoir.⁷

Both views have had their share of impact on management theory and practice.⁸ However, the exciting part of the constructionist studies is that they pay attention to the tacit as well as the explicit aspects of knowledge. To these

authors, “knowledge management” is more than data warehousing, installing intranets, developing expert systems, or refining organizational routines. The groundbreaking theory of two constructionists, Ikujiro Nonaka and Hirotaka Takeuchi, suggested that tacit knowledge is the key source of innovation in Japanese companies and hence of major importance to sustainable company performance. The lesson to be learned from these “knowledge-creating companies” is that innovations come about when organizational members: share tacit knowledge; convert this into explicit knowledge in the form of a concept for a product or service; use company visions, strategies, market studies, or social opinions to justify this concept; and finally build a new prototype product.

The key concept in their theory is knowledge, not as representation, but as “justified true belief.”⁹ The cognitivist would argue that these beliefs are more or less true according to their similarity to an external reality. In contrast, Nonaka and Takeuchi argue that the individual can justify the truthfulness of his beliefs from observations of the world, and these observations depend on a unique viewpoint, personal sensemaking, and individual experience.¹⁰ When we create new knowledge we make sense out of a new situation by holding justified beliefs, committing ourselves to this new situation, and, most importantly, by enhancing our potential to act in a new situation.

At the level of the individual organization member, knowledge as justified true belief is not a matter of any particular concern. It is a part of everyday life. However, knowledge creation is also a social process; more than one individual is involved. The first steps in knowledge creation, “sharing tacit knowledge” and “creating concepts” hinge on individuals being able to share their personal true beliefs about a situation with other team members. At this point, the whole process of creating knowledge becomes dramatically different: *justification becomes public*. Each individual is faced with the challenge of justifying his true beliefs in presence of others, and precisely this process of justification makes knowledge creation a highly *fragile process*.¹¹

In organizations, there are four barriers to the public justification processes.¹² The first barrier is the need for a legitimate language, especially a stock of words. Personal knowledge has to be made explicit in a language that is known and acceptable to the team members and to the company. However, some personal knowledge can only be expressed by using words that are unknown. Recognition of new business opportunities might require an innovative vocabulary such as “neutraceuticals,” “infotainment,” “edutainment,” or “cybershopping.” Stories and habits constitute the second barrier. These might be stories of failed attempts to implement a technology, pursue a market opportunity, or develop a new product that work against the attempt to justify personal beliefs. Habits constitute routines in the company that are difficult or impossible to question owing to personal beliefs (“we have done this for years and we will continue to do it”). The third barrier is one of formal procedures. A formal procedure is a double-edged sword, however. On the one hand, it represents embedded experiences and successful solutions to complex tasks, but on

the other, in directing communication, defining planning steps, setting performance measures for control, and so forth it can effectively work against public justification of individual beliefs.¹³ The last and fourth barrier is the most fundamental: company paradigms. A company's strategic intent, vision or mission statement, strategies, and core values constitute its paradigm. For political and cultural reasons, individuals will find it difficult to justify personal beliefs that are not in accordance with the ruling paradigm.

These four barriers make knowledge creation a fragile process and should be a top priority on the agenda of any manager worrying about her company's competitiveness. Some managers would try to cope with the fragility of knowledge creation by tightening procedures, policies, and action. This would be a wrong move. Reinforcing routines, praising habits, and telling and reinforcing scary stories of failed entrepreneurs while pushing for rigid strategies makes public justification of personal beliefs even more difficult. Great ideas and concepts are abandoned prematurely and never transformed into successful products or services. Having experienced the increasing effectiveness of the four barriers, some organization members decide to terminate their contribution to the company's knowledge creation. They become a large class of passive participants rather than active contributors. Other organization members with outstanding generic or industry-specific competences grow tired and leave the company—only to create a new entity with which the company must compete.

For the constructionist, the fragility of knowledge creation presents a major managerial challenge. He searches for *enabling conditions* that allow knowledge creation to happen. Enabling conditions might take the form of systems (such as groupware) or structures (such as a project structure). However, in our search for enabling conditions, we have found values guiding relationships in organizations to be of particular importance,¹⁴ and the value of care in organizational relationships is one key enabling condition.¹⁵

Understanding “Care”

Effective knowledge creation puts particular demands on the way people relate to each other in a company. Untrustworthy behavior, constant competition, imbalances in giving and receiving information, and a “that’s not my job” attitude endanger effective sharing of tacit knowledge. Constructive and helpful relations speed up the communication process, enable organization members to share their personal knowledge and to discuss their ideas and concerns freely. Overall, good relations purge a knowledge-creation process of distrust, fear, and dissatisfaction. Once good relations have been established, the organization's members will then have the confidence and freedom to satisfy their needs and aspirations to explore unknown territories such as new markets, new customers, new products, and new manufacturing technologies.

“Care” is something most human beings can relate to through their personal histories. It might describe the way parents behave towards their child, the

way a teacher behaves towards his student, the way a manager behaves towards his employees, or the way a doctor behaves towards his patients. In the broadest sense, care is defined as serious attention (heed), a feeling of concern and interest.¹⁶ Regarding care in relationships, the philosopher Milton Mayeroff suggested that "to care for another person, in the most significant sense, is to help him grow and actualize himself."¹⁷ To care for someone is to help her to learn, to help her to increase her awareness of important events and their consequences, and to help nurture her personal knowledge creation while sharing her insights.¹⁸

Care has been further conceptualized in various ways by various authors. Some suggest that care cannot be broken down into finer detail,¹⁹ while others, like Mayeroff, take the view that care gives rise to particular behavior in relationships. Behavior in turn can be characterized by dimensions, making care more concrete. Dimensions make it easier for management to communicate on the value of care and what is meant by care in organizational relationships. Five dimensions of behavior in relationships are most important: mutual trust, active empathy, access to help, lenience in judgment, and courage.²⁰ Care gives rise to these forms of behavior and to their interplay.

Care gives rise to trust. In every encounter with another person, you establish some degree of trust in him. Your trust in some ways compensates for the knowledge you lack—you do not know all of his motives, his preferences, interests, or personal background, his opinion of you, his reactions to your conversations, his backing in the organization, his ability to honor the agreements the two of you have made and so forth. You cannot help another person to grow and actualize himself, however, unless you trust him to use your teachings and advice in the best way possible; to add his personal value to your input. Trust is also reciprocal. In order to accept your help, the other person has to believe in your good intentions to support her. She needs to trust you not to exercise "overhelping" in order to make her look incompetent in the eyes of the team leader. In order to enhance trust, you should show consistent behavior towards the other person over a period of time (with a minimum of surprise).

Care also gives rise to active empathy, making it possible to assess and understand what the other person needs. Empathy is the attempt to put yourself in another's shoes: understanding his particular situation, interests, skill level, history of successes and failures, and future opportunities and problems. By means of active empathy, you proactively seek to understand the other person. Through active questioning and acute observations, you seek out instances where your efforts are needed. You practice dialogue rather than advocating only your own point of view. The real needs can be hidden from your view, however, since expressing emotional needs in an organization can be a cumbersome process. According to studies by Ashford and Humphrey, many organizations suppress individuals' emotions through "feeling rules."²¹ Such rules are, typically: "personal success should not be conveyed too exuberantly," "long-term frustrations should not be mentioned to colleagues," "conflicting

viewpoints are best dealt with by disassembling them," "a difficult customer pestering the sales personnel should be fobbed off with a friendly smile," and so on. Such feeling rules create effective workplaces, but they might also inhibit personal growth and development, since any learning process produces both positive and negative emotions that might need sharing. Care accomplishes precisely this sharing of positive and negative emotions through active empathy. Consider the example of a relationship between the novice and the tutor in learning a new computer language. It helps when the caring tutor explains that he has had some of the same personal frustrations in learning the syntax and functioning of the new language, and that quickness in grasping the difficult logic of the language is not a gauge of the intellectual capacity of the novice, but an inherent characteristic of a long learning process.²²

Care also translates into real help. In the master carpenter and novice relationship, the master will teach the design of a tool, the usage of the tool, maintenance of the tool, where to acquire new tools, and so on. Not only does he show by example how to do good carpentry, he also extends the novice a helping hand in other respects. Help also has to be directly accessible to those needing it. What good is a master who is never available to the novice? What good is a master who protects himself from his novices because he is scared of losing his laboriously acquired skills? Here we touch on one of the fundamental problems of sharing knowledge in companies, which care remedies.

Care gives rise to lenient judgment among organizational members. "Lenient judgment" is similar to lenience as practiced in court. Although the evidence in a case could, under normal circumstances, support a harsher sentence, the judge, guided by the advice from the jurors, can take a lenient attitude towards the accused. To exercise lenience means that the judge takes into consideration such things as the context of the offense, the background of the accused, her psychological state at the time the crime was committed, and the lack of awareness of the consequences of the crime. Lenient judgment comes into play when organization members experiment with new task solutions and make errors as part of personal growth. An overly harsh judgment could also prevent further experimentation, and in helping another individual to "grow and actualize himself," you need to have considerable lenience in your judgment of him.

Finally, care in organizational relationships is also visible in the courage that organization members exhibit towards each other. Courage is needed to allow fellow organization members to experiment with new task solutions and present the results of these experiments. Moreover, care encourages organization members to voice their opinions or give feedback as part of a process to help others.

What Happens to Knowledge Creation When Care Runs High or Low?

Organizational relationships range from high-care relationships (characterized by considerable mutual trust, active empathy, access to help, lenience in

FIGURE 1. The Processes of Knowledge Creation

		Knowledge	
		Individual	Social
Care	Low	Capturing	Transacting
	High	Bestowing	Indwelling

judgment, and courage) to low-care relationships (characterized by distrust, no empathy, little or no access to help, authoritative judgment, and cowardice). Depending on the extent to which care is present, the knowledge-creation processes in the company will differ considerably. There are two processes on the individual or social level respectively; capturing and transacting, when care is low, and bestowing and indwelling when it is high. These processes are depicted in Figure 1.

When care is low among organization members, the individual will try to *capture* his knowledge rather than share it voluntarily. Capturing occurs naturally, since the individual is left to his own devices; there is limited inquiry into his needs and scant help to be expected from colleagues. If the individual is a novice, he will have to learn new skills by himself. The learning process has the goal of achieving what Merleau-Ponty called "maximum grip" of a situation.²³ When lifting a heavy piece of furniture and carrying it over some distance, you will position your body in such a way that you get a maximum grip on the furniture. Left to your own devices, you will pay limited attention to obstacles, like other people standing in your way. In solving other more complex tasks in a limited-care environment, the situation is similar. Working in isolation, with limited feedback from others, you will deploy and apply your methods in such a way that the task can be completed successfully. The trial and error involved in coming to terms with the task will also be your own private process. You learn which methods work and which do not. You develop a good personal understanding of the task at hand and gain a large amount of tacit knowledge, specially adapted to the methods you use. The perfect example here is that of a student working in isolation developing his own methods of learning.

When care runs low, attempts to present new ideas, concepts, or prototypes by the individual will be met with a brusque, austere attitude and harsh judgment by other participants in knowledge creation. When organizational members' futures with the company are dependent on the expertise they demonstrate, and not on the extent to which they actually help others, individuals will attempt to build up and defend their own hegemonies of knowledge. Spending time listening to others in an effort to understand their viewpoints is seen as a waste of time. In this competitive context, sharing more knowledge than necessary will lead to reduced power and influence. The individual will not be motivated to make his knowledge explicit or shareable unless there are clear transactions that would make this favorable. He will judge the knowledge sharing as a transaction, knowledge shared being based on expected returns.

Participating in creating social knowledge,²⁴ each team member *transacts* knowledge with other participants. It is possible to transact explicit knowledge, like "this document for that" or "this explanation of the working of this machine for that explanation" and so forth. It is more difficult, if not impossible to do so with tacit knowledge. Tacit knowledge would first have to be made explicit before the other party could assess its value (expected returns) and decide what to exchange. Furthermore, when care runs low, limited trust and lenience in organizational relationships affect knowledge transactions in two ways. First, since the organization member would have to demonstrate his expertise in order to establish his value to the company,²⁵ explicit knowledge must be expressed in a legitimate fashion: concepts must be clearly defined, arguments have to be "bullet proof," the data supporting a claim would have to be valid and reliable, old findings rejected at an earlier stage of knowledge creation will be buried for ever, and so forth. The rule is: before you receive visitors, make sure to do some "mental housecleaning." The knowledge made explicit to the team would be the end result of a "maximum grip" learning process, not revealing all the minor obstacles overcome during the learning process itself (like learning a new computer language). Second, sharing tacit knowledge normally requires the use of unconventional language, analogies, or metaphors.²⁶ When care runs low, applying such means proves difficult since there is little trust and lenience, as well as inadequate courage for experimentation.

Much of the personal expertise developed in the capturing process will not be transferable to other individuals in the team or group. For example, at an academic conference, participants share the end result of a long personal research process. They minimize the risk of conveying non-legitimate knowledge in order to avoid being excluded from the later transactions; they argue in an orderly fashion; and they transact their knowledge primarily on the basis of expected returns. However, the tacit knowledge of doing exemplary research remains a personal virtue.

When there is care in organizational relationships, there will be mutual trust, active empathy, access to help among team members, lenient judgment towards participants in the team, and courage. In such a situation the individual

organization member will *bestow* knowledge on others as well as receive active help from others (others bestowing knowledge on him). The environment will be supportive, and the goal of the learning process shifts from obtaining “maximum grip” to reaching “maximum leverage” on others’ knowledge. There is a mutual intent to help others to optimize their task performance, and, therefore, to share knowledge. The “little hints” that others can provide matter more than building up the personal hegemony of knowledge. The individual can experiment more freely in order to develop unconventional task solutions. He is emboldened in his pursuit of knowledge creation.

The individual will be integrated into the team. Other organization members will take an active interest in the learning process, and the individual will be encouraged to make knowledge explicit while learning. When care runs high, colleagues show interest and support, and the individual organization member can spontaneously articulate his knowledge using unconventional language, metaphors, and analogies. The individuals disclose the tricks they use to overcome minor and major obstacles in the learning process, enabling others to figure out how to do similar learning for themselves. Expressing personal difficulties in knowledge creation will be met with lenience from other team members and active feedback will be provided.

The process of mutual bestowing provides fertile ground for a distinct process of creating social knowledge in a team: *Indwelling*. Indwelling is of particular importance to the sharing of tacit knowledge and concept creation. An authoritative source on the term is Polany and Prosch’s “Meaning.”²⁷ They suggested that dwelling in a concept can be understood as a dramatic shift of perspectives: you change from “looking at” to “looking with” the concept. In broader terms, indwelling is about commitment to an idea, to an experience, to a concept, or to a fellow human being. In developing shared tacit knowledge, the challenge for participants in knowledge creation will be to dwell in the experiences, perspectives, and concepts of other participants, or in other words, to change from self-commitment to other-commitment. In changing such deeper-level commitments, participants literally make changes in their perceptions. They begin to see the value of personal knowledge for the successful task performance of the whole team or of individual members. For example, they rethink the relations between a company and its customers. If they commit themselves to “looking with the customer at his problems” rather than to the pleasantly aloof “looking at the customer with his problems,” they start to see the world through a new lens. They identify “key customers” not for the sake of distributing another customer satisfaction survey, but rather to work with the customer towards a better understanding of internal processes. By sharing work experiences with the customer, new and previously unrecognized needs can be identified and products or services can be developed to satisfy them.

The prerequisite for indwelling is high care in organizational relationships. Unlike knowledge creation under low care, where “experts” possess their own knowledge hegemonies and transact based on expected returns, knowledge

creation under high care happens among equals²⁸ interested in making the team grow. Because care gives rise to active empathy, personally held beliefs become a field of active inquiry. For example, there is mutual interest in revealing reasons behind different individual experiences with the same task, or beliefs regarding the reasons for good or bad task performance. Trust and lenience make it easier to articulate emotional aspects of an experience, using a different vocabulary: “my *intuition* says this product will be great,” “my *sense* is that this project will be difficult,” and so forth. When care runs high, team members extend help to each other in finding new means of conveying and sharing personal beliefs, and the behavior-modes of lenient judgment and courage accompany the knowledge-creation process.

Furthermore, when care runs high, there is also readiness to question and change the basis for legitimate or acceptable knowledge. Because they do not run the risk of endangering future participation in knowledge creation, participants can take more chances in articulating and justifying their beliefs. New language is more easily invented, persistent stories and myths are reviewed and seen in a new light or even discarded, and organizational routines are questioned and changed. Where new knowledge creation calls for it, even company paradigms can be re-assessed.

The outcome of creating social knowledge under conditions of high care will be new shared tacit knowledge that can form the basis for creating a new service or product concept.

The four processes of knowledge creation with some key characteristics are summarized in Figure 2.

What Can Companies Do to Facilitate Care?

There are many everyday ways to destroy care in any company. For example, weak job security and unjust behavior towards employees (such as firing people without giving adequate explanations)²⁹ contribute to general fear among employees of losing their work. This fear induces self-interest more than care for others. Moreover, tolerating injustice such as allowing (and even implicitly encouraging) employees to “steal” ideas and present them as their own is likely to make people establish their hegemonies of knowledge and protect their turf. Establishing bureaucracy with clear job descriptions—and reinforcing it with strong control mechanisms and clearly articulated sanctions to be expected when high performance targets are not met—could lead employees to avoid the extra effort of caring. Establishing strict feeling rules suppressing the expression of emotions (even joy when performing well) makes caring difficult if not impossible. Creating highly individualistic incentive systems and rapidly downsizing by removing middle-level management layers³⁰ both lead to intense competition among employees. In this situation, the “smart” employee is likely to care more for his own position and career than about helping others. Some companies will explicitly punish ignorance, while discouraging employees to seek new knowledge by asking experts,³¹ thus endangering any effort to give

FIGURE 2. Characteristics of Knowledge Creation

Process	Level	Characteristics
Capturing	Individual	• Individual search for "maximum grip" • No interest/attempt to share knowledge • Limited feedback from others • Isolation of individual
Transacting	Social	• "Experts" transacting their knowledge • Minimizing risk of conveying non-legitimate knowledge • Sharing based on expected returns • Knowledge shared is the end result of a "maximum grip" learning process
Bestowing	Individual	• Knowledge created in a supportive environment ("maximum leverage") • Strong intent to share knowledge on the future • Feedback from others • Integration of individuals into the team
Indwelling	Social	• "Equals" creating knowledge • Questioning and changing the basis for legitimate knowledge • Sharing to help the team grow • Attempts to "look with" not "look at" other teammates

or receive help. Companies that actively destroy care or do not foster high-care relations, will push knowledge creation into capturing or transacting. Their knowledge-creation processes will foster explicit social knowledge, whereas tacit knowledge will primarily reside in the individual. Consequently, the company becomes increasingly dependent on individual expertise for performing certain complex tasks. Moreover, managers who destroy care in relationships will deprive their companies of the social tacit knowledge necessary for successful product and process innovations.³²

Managers interested in retaining a high level of innovation in the company and decreasing the company's dependency on single individuals will prefer the processes of bestowing and indwelling, leading to both individual and social knowledge that is tacit as well as explicit. But one must not forget that for these latter two processes to happen, care must be fostered among the organization's members. There will be incidents of caring behavior in any company at some time or other. There might also be "pockets" in the company where care is present. The challenge for managers, however, is to make care in organizational relationships widespread and sustainable. A few ways in which management can cultivate care are:

- An *incentive system* with particular focus on access to help and other behavior that builds up care in organizational relationships.³³ Systems rewarding the contribution to knowledge creation in the company should

be emphasized. It would, however, be naive to expect that the incentive system alone could ensure care in relationships. A reward for care could even motivate tactics of over-helping aimed at making the care-receiver look less competent in the eyes of colleagues. Incentive systems should therefore be tightly coupled both with explicitly formulated values of care and with training programs in helping. Team-based incentives are a possible solution to over-helping. The team would receive a reward based on its overall performance, split equally among all team members. This would encourage individual participants to share personal knowledge in order to contribute to the overall performance of the team. Performance appraisals should emphasize helping behavior towards younger colleagues and accessibility to the time and attention of experts. Furthermore, each member of the organization should be assessed on her interest in and commitment to building up trust in her relationships with colleagues. Performance appraisal should convey the organization's behavioral expectations in a transparent way. To foster care, such a system should include assessment by both managers and subordinates.³⁴

- *Mentoring programs* which give senior members of the organization a clear responsibility for helping junior members to grow and actualize their full potential in the organization. Mentoring programs must motivate seniors to share their knowledge with juniors and newcomers. Since knowledge is to a large extent equated with power and influence, tactics of knowledge shielding are often common practice. Under such circumstances, the mentoring program must open up the organization members' access to expertise in the company. Management can achieve this by defining two sets of responsibilities for the individual, each of which should grow proportionally: the responsibility to acquire expertise; and the responsibility to make your help accessible to those who need it as your expertise grows. This goes beyond what Dreyfus and Dreyfus called competent behavior, where the organization member starts to "assume responsibility for the outcome of his actions."³⁵ Expertise should be equated with responsibility beyond outcomes of actions where a "caring expert" understands that he is responsible for sharing his knowledge. He allows the junior to understand the link between action and outcome, and he offers help to train the junior. During the course of knowledge creation, participants with various backgrounds have to perform the functions of the caring expert. Hence, organization members will do better with training to improve their skills as teachers or tutors. Teaching goes hand in hand with knowing.³⁶
- *Trust, openness, and courage as explicitly stated values* by top management, and as formulated expectations for the behavior of organization members. Particular emphasis should be put on the components of an organizational culture that encourage knowledge creation and allow knowledge to flow freely, as well as on the importance of fostering team players.

Explicitly stated values, in turn, need to be visible in everyday managerial actions. Management might screen the key processes in the company to find out to what extent care is really practiced among the members of the organization. When care runs low, the key question to ask is "why?" Is there a need to change the explicit values, the performance appraisal or incentive systems, or is it simply a matter of using slack time to allow organization members to develop better relationships?

- *Training programs in care-based behavior* that show organization members care in practice and how to encourage care in relationships. The emphasis should be on learning how to help, present personal insights, develop concepts, and justify new ideas while exercising lenience in judgment. Care-based training can be attached to off-the-job or on-the-job training programs. A major pharmaceutical firm found that one way of letting managers acquire first-hand experience with care-based behavior was through outplacement in human-service organizations.
- *Project debriefings and other forms of learning-oriented conversations* that have sharing experience among project participants and enhancing the personal learning of each individual as the chief goals. After closing an innovation project, sufficient time is too seldom allocated to debriefings, and too little care devoted to helping each individual to get the most learning benefit out of the project. Good project debriefings cover a review of the project goals and whether they were met, the individuals' experiences with working relationships, the key lessons learned by the individuals and by the team as a whole, the new methods and tools resulting from the project, the quality of the leadership exercised, as well as the knowledge and best practice(s) to be transferred to other teams.
- *Social events* likely to stimulate good relations. Social events, ranging from informal chats around the water cooler to holiday parties, can have a great effect on organizational relationships. Difficult personal issues can be discussed and resolved with colleagues, and time can be allocated to explore the interests of fellow organization members.

A good start to enhancing the values of care would be to focus on the sources of new knowledge: in product development teams or in such places as the marketing, sales, human resources, manufacturing, and finance functions. Start with incentive systems. Stimulate good project debriefings in which teams learn to create tacit social knowledge more effectively through reflection on their own work. Formulate values that visualize the key responsibilities of sharing knowledge across business units, disciplines, teams, and geographical areas. Be open to changing paradigms and organizational routines in order to enhance efficiency and effectiveness. Introduce company-wide mentoring programs that encourage seniors to share their knowledge with juniors. Design company-wide training programs in knowledge creation that emphasize the value of care in sharing tacit knowledge, creating product and service concepts, justifying these concepts, creating product prototypes or initial service offerings, and leveraging

knowledge throughout the company. Bear in mind that what will make or break the transformation into a “knowledge-creating company” will not be the overall structural approaches of “managing knowledge,” but your sensitivity to the way people relate.

Caring for Knowledge in Unilever³⁷

A brief case serves to illustrate the role of care in knowledge creation and the ways managers can cultivate care. Unilever is a fast-moving Anglo-Dutch consumer-products company headquartered in London and Rotterdam. Its portfolio covers foods as well as home and personal care products. With manufacturing operations in more than 90 countries and about 300,000 employees, the company has a turnover of \$52,161 million. In 1996, investments in basic research and product innovations exceeded \$934 million, leading to the filing of more than 400 patent applications. In several product areas, Unilever has advanced and diverse methods for enabling knowledge creation. For the Culinary category—which was formed in 1996 and covers products such as tomato-based sauces, cooking ingredients, and dressings—knowledge creation and sharing has been the key to its success.

Caring for “consumer’s knowledge” is more than a slogan at Unilever. One area of knowledge creation is developing a deep understanding of the consumer’s habits and attitudes when preparing their meals. Dwelling in the mind of the consumer—through visits to consumer homes and intensive studies of cooking procedures (“looking with” rather than “looking at” the consumer cooking)—enables the development of highly innovative product sauces. A striking example is the company’s gratin sauces for potatoes. Based on thorough consumer understanding (potatoes are a very traditional and favorite dish in the Netherlands), on experimentation and creative thinking, and on excellent marketing and patented technology, the product broke traditional market boundaries with a totally new proposition that was highly attractive to consumers. The product has also been successfully introduced into a number of other countries. Besides a number of retailer and consumer prizes, the product also won a Unilever Foods Innovation Award.

Another example of knowledge creation is in Culinary’s tomato supply chain. Having acquired a number of companies in recent years, there was a strong need to leverage the knowledge of these very different companies. Key experts in different phases of the supply chain were brought together in workshops to share and map their knowledge. Although the original objective was to understand what the experts knew and didn’t know, these events led to the creation of new knowledge, as the experts started to build upon each other’s knowledge and actively sought to help out where their expertise was needed.

These projects—and many more—were put together in the Culinary Knowledge Initiative. Wouter de Vries, by education an information scientist and “knowledge engineer,” became the coordinator of this initiative. Care as

an underlying value for the way people relate was instrumental to the success of the endeavor and Unilever has pursued various ways to cultivate care.

In the Culinary category, the company has been very successful in applying “softer” incentives. In the tomato supply chain example, the compliment of being invited to participate in the workshops, and after that being involved in global strategic projects, was perceived as immensely rewarding. The global strategic projects aim at meeting key challenges in the supply chain such as developing new plants or developing an international sourcing strategy within the company. Experts continuously search for, and are motivated by, the possibility to utilize the full potential of their knowledge. Traditionally, the performance appraisal of an innovation process has been strongly attached to the final product as a deliverable. In the Culinary Knowledge Initiative, the performance appraisal is being revised to include knowledge as a deliverable as well. A collective responsibility of the team is to contribute to the overall knowledge of Unilever. By mutual caring for the unique skills and backgrounds of team members, the team can achieve maximum leverage of the individual’s knowledge and hence fulfill their responsibility. In fact, knowledge creation is a factor in winning one of the company’s team awards.

Unilever also has explicit values attached to the importance of knowledge sharing. For example, as mentioned explicitly in Unilever’s Corporate Purpose Statement:

Our deep roots in local cultures and markets around the world are our unparalleled inheritance and foundation for our future growth. We will bring our wealth of knowledge and international expertise to the service of local consumers—a truly multi-local multinational.

Care also gives rise to trust and Culinary sees trust as *the* enabling condition to accomplish knowledge sharing. In the Culinary’s knowledge initiative, various knowledge-sharing sessions always start by explicitly addressing trust building amongst participants.

The Culinary’s knowledge initiative also includes “knowledge debriefs.” At regular intervals, as well as at project completion, the whole project team will be engaged in a debriefing about what and how they have learned and made new knowledge explicit. In this way, the project team starts to see “knowledge” as an additional project output, and they start to care for the quality and potential of knowledge in the company. Although the major focus of these knowledge debriefs will be on social knowledge, experience has shown that project work also enhances individual learning, thus increasing the value of individual knowledge to Unilever.

Social events play a key role in stimulating care in organizational relationships and care for knowledge. The knowledge debriefs, project startup, and knowledge-sharing sessions are usually performed off-site, thereby creating time for people to chat and get to know each other better, resulting in deeper and more trusting relationships.

Unilever has been active in the “knowledge creation and sharing” field for many years without realizing that this would now be called “knowledge management.” Unilever still prefers not to use this term since it suggests “control” and does not focus sufficiently on the human factor. By cultivating care in this way Unilever makes sure that they “practice what they preach.”

Conclusion

The key challenge for researchers will be to find further enabling conditions for the fragile processes of knowledge creation. Another challenge will be to develop a research design for testing the impact of care on knowledge creation.³⁸ We must find meaningful measures of care which allow for comparative studies of knowledge creation in companies.

Everything said is said from a tradition.³⁹ In her tradition, the cognitivist is deeply concerned with representations of an established reality. Her passion lies with the creation of increasingly accurate models of objects, and the virtue of a complete knowledge base is the solution to pre-defined problems. The cognitivist focuses on “what is.” Based on a different philosophical and scientific tradition, the constructionist asks “what ought to be.” The world is brought forth, and what you eventually see of the world depends on who you are. Your knowledge allows you to act effectively in the world that you gradually bring forth. In any company, it is the differences in personal knowledge that drive innovation.

Notes

1. For a good overview of this argument, see Robert Grant, “The Knowledge-Based View of the Firm: Implications for Management Practice,” *Long Range Planning*, 30/3 (1997): 450-454. For additional literature on knowledge management, see L. Edvinsson and T. Sullivan, *Intellectual Capital* (New York, NY: Harper Collins, 1997); T. Davenport and L. Prusak, *Working Knowledge* (Boston, MA: Harvard Business School Press, 1997). Some practical cases on knowledge management, covering companies such as Dow Chemical, Skandia AFS, and Motorola, are available in a special issue on “The Epistemological Challenge: Managing Knowledge and Intellectual Capital” of the *European Management Journal*, 14/4 (1996). For those readers interested in the theoretical foundations of competitive advantage, rent, and firm resources, see R. Rummelt, D. Schendel, and D. Teece, *Fundamental Issues in Strategy* (Boston, MA: Harvard Business School Press, 1994); D.J. Teece, G. Pisano, and A. Shuen, “Dynamic Capabilities and Strategic Management,” *Strategic Management Journal*, 18/7 (1997): 509-534.
2. For more on managerial effectiveness and firm resources, see R.P. Castanias and C.E. Helfat, “Managerial Resources and Rents,” *Journal of Management*, 17/1 (1991): 155-171.
3. I. Nonaka and H. Takeuchi, *The Knowledge Creating Company* (New York, NY: Oxford University Press, 1995).
4. The ultimate quest of the cognitivists was to create information-processing machines that would resemble human intelligence. These machines would,

like the brain, manipulate symbols and thereby solve predefined problems. See, for example, N. Block, "The Computer Model of Mind," in D.H. Osherson and E.E. Smith, eds., *Thinking: An Invitation to Cognitive Science*, Vol. 3 (Cambridge, MA: MIT Press, 1990).

5. Space does not allow for a full overview of the cognitivist perspective. If you're interested in further readings, you may turn to the seminal work of H. Gardner, *The Mind's New Science: A History of the Cognitive Revolution* (New York, NY: Basic Books, 1985). To many observers, the cognitivist perspective found its roots in a paper by W. McCulloch and W. Pitts, "A Logical Calculus of the Ideas Immanent in Nervous Activity," *Bulletin of Mathematical Biophysics*, 5 (1943): 115-133. This was the first attempt to conceive of the nervous system as a logical structure. Later cognitivist work applied to human cognition include A. Newell and H. Simon, *Human Problem Solving* (Englewood Cliffs, NJ: Prentice-Hall, 1972); H. Simon, *Models of Thought*, Vol. 2 (New Haven, CT: Yale University Press, 1989). Contributions to artificial intelligence include M. Minsky, "Steps Toward Artificial Intelligence," in E. A. Feigenbaum and J. Feldman, eds., *Computers and Thought*, (New York, NY: MacGraw Hill, 1963). A very comprehensive volume on Artificial Intelligence is R. Kurzweil, *Intelligent Machines* (Cambridge, MA: MIT Press, 1990). This book is instructive in understanding the fundamental idea that knowledge is expressible in language. Although the cognitivist charter at the outset was to advance a scientific rather than a psychological or philosophical study of the mind, contemporary philosophers frequently debate the contribution of the cognitive revolution to philosophy. See, for example, A. Goldman, *Epistemology and Cognition* (Boston, MA: Harvard University Press, 1986). Because of its implications on a fundamental understanding of behavior, the cognitivist perspective also had a strong influence in the literature on organizational behavior, especially in the way the organization was to be understood as an "information processing mechanism" or problem-solving entity. The most notable are the seminal works by J.G. March and H. Simon, *Organizations* (New York, NY: Wiley, 1958); R.M. Cyert and J.G. March, *A Behavioral Theory of the Firm* (London: Blackwell, 1992). For more information on cognitivism in organization and management studies, see also the essay collection by G. von Krogh and J. Roos, *Managing Knowledge: Perspectives on Cooperation and Competition* (London: Sage, 1996).
6. The "constructionist perspectives" is sometimes associated and even used interchangeably with terms such as "creationist perspective," "constructivism," and "social constructivism." Space does not allow a fuller treatment of the difference, nor the usage of these terms. Interested readers could turn to Owen Flanagan, *The Science of the Mind* (Cambridge, MA: MIT Press, 1991); or A. Goldman, 1986 for "constructivism" in cognitive science; to P.M. Rosenau, *Post-Modernism and the Social Sciences* (Princeton, NJ: Princeton University Press, 1992) for "constructivism" in social science; and finally to S.R. Clegg, C. Hardy, and W.R. Nord, eds., *Handbook of Organization Studies* (London: Sage, 1996) for "constructivism" in organization and management studies. Here, I use the general terms "construction" and "constructionist" to distinguish a larger class of work on knowledge and cognition both on the individual and social levels.
7. The constructionist perspective is more recent than the cognitivist. The work in this area was boosted through some fundamental experiments showing how one cognitive system (like the brain) represents its world in a unique way, and acts according to this unique representation. Furthermore, a key development in the understanding of cognition in recent years has been the development of theories of neural networks. Here the cognitive system is understood as a number of networked (simple) components that mutually strengthen or weaken their connections based on sensory input. A sensory input, like a light or sound, corresponds

to a certain state in the network (recognition of the image). This state however, is not only defined by the input signal, but also by the history of connections at the time when the input is received. Thus, the history of experiences plays an important role in shaping the world for the observer. The histories of the two perspectives reveal clear differences. Where the cognitivists took particular interest in the cognitive system's capacity to solve well defined problems (like calculus), the constructionists worked with non-representable problems (like painting a picture). Where the cognitivists searched for heuristic methods to problem solving, the constructionists investigated adaptive methods. Where the cognitivist searched for deductive reasoning patterns, the constructionist studied abductive reasoning. Where the cognitivist searched for representable knowledge (symbolic), the constructionist focused on know-how (action). Eventually, the cognitivist success criteria of cognition became "validity" (of representation). For the constructionist it became "viability" (allowing for effective action). Important contributions on the understanding of human cognition and knowledge include H. Maturana and F. Varela, *The Tree of Knowledge* (Boston, MA: New Science Library, 1987); H. Maturana and F. Varela, *Autopoiesis and the Cognition: The Realization of the Living* (London: Reidel, 1980); F. Varela, J.E. Thompson, and E. Rosch, *The Embodied Mind* (Cambridge, MA: MIT Press, 1992). These theories have also had an impact on computer science, showing some of the limitations and possibilities in dealing with explicit as well as more tacit forms of knowledge. For more on this, see, for example, T. Winograd and F. Flores, *Understanding Computers and Cognition* (Norwood, NJ: Ablex, 1986). For additional ideas on computer modeling of cognitive systems, see F. Varela and P. Bourguine, *Towards a Practice of Autonomous Systems* (Cambridge, MA: MIT Press, 1992). Unlike the cognitivists, the constructionists embraced contributions from philosophers from the very beginning. The book *Embodied Mind* is an example of how theories of cognition (science) are coupled with aspects of philosophy and psychology. This shift was deemed necessary because constructionists worked on a concept of knowledge that covered both tacit and explicit aspects, and because individual knowledge was believed to be partly influenced by cultural factors. Constructionists frequently draw on philosophers, including: Michael Polanyi, *The Tacit Dimension*, (New York, NY: Anchor Books, 1967); Richard Rorty, *Philosophy and the Mirror of Nature* (Princeton, NJ: Princeton University Press, 1979); Richard Dreyfus (with S. Dreyfus), *Mind Over Machine* (New York, NY: MacMillan, 1986).

8. For an overview, see G. von Krogh, J. Roos, and K. Slocum, "An Essay on Corporate Epistemology," *Strategic Management Journal*, Special Issue, 15 (1994): 53-72. Pioneers of the constructionist perspective include, among others: I. Nonaka and H. Takeuchi, op. cit.; Dorothy Leonard, *Wellsprings of Knowledge* (Boston, MA: Harvard Business School Press, 1995); Gunnar Hedlund, "A Model of Knowledge Management and the N-Form Corporation," *Strategic Management Journal*, Special Issue, 15 (1994): 73-90; John Seely Brown and Paul Duguid, "Organizational Learning and Communities of Practice: Towards a Unified View of Working, Learning, and Innovating," *Organization Science*, 2 (1991): 40-57.
9. Nonaka and Takeuchi [op. cit., p. 21] base their definition on Plato's discourses in the *Meno*, *Phaedo*, and *Theaetetus*.
10. They emphasize "beliefs" and "justification" rather than "truth" to differentiate themselves from the cognitivist tradition. Note also that tacit knowledge by some authors has been understood as "tacit beliefs." See, for example, P. Churchland *Neurophilosophy: Towards a Unified Science of the Mind/Brain* (Cambridge, MA: MIT Press, 1986).
11. Please note that according to the cognitivist, sharing tacit knowledge would be a matter of holding shared and complete representations, and there can be no doubt

about the correspondence of these representations to reality. In a team, if one member were somewhat slow in making a representation, the "funnel model" would be utilized. Other team members would provide sufficient information so that the team member would eventually share reality with others. The constructionist takes a different point of view. Different team members hold unique, personal knowledge which is partly tacit, and the challenge in a company is to utilize this potential. In sharing knowledge, each individual must publicly justify his personal knowledge.

12. The barriers listed here have been adapted from studies in the sociology of knowledge. See, for example, the work of P. Berger and T. Luckmann, *The Social Construction of Reality* (New York, NY: Penguin, 1967).
13. A formal procedure captures learning but can with time become "core-rigidities" that prevent innovations in the company. For more on this, see Leonard Barthon [op. cit.]. In Xerox, John Seely Brown and Paul Duguid [op. cit.] found that copier repairmen often had to go beyond the technical manuals in order to successfully repair a broken copier. Sharing stories among themselves became a major route to solving highly complex technical problems. Making such approaches legitimate, and allowing the technical repair manual to be put aside, could be seen as part of the process of making the public justification easier.
14. See G. von Krogh, I. Nonaka, and K. Ichijo, "Enabling Knowledge Creation," to appear in G. von Krogh, J. Roos, and D. Kleine, eds., *Knowledge and Organization* [tentative title] (London: Sage, forthcoming 1998).
15. Some of the previous groundwork for this knowledge enabler is found in G. von Krogh, K. Ichijo, and I. Nonaka, "Bringing Care into Knowledge Creation of Business Organizations," paper presented at the Conference on *Comparative Studies on Knowledge Creation*, Honolulu, Hawaii, December 1996.
16. *Oxford Dictionary* (Oxford: Oxford University Press, 1995). Please note that this definition is different from "careful" in the sense of precise, methodological, rigorous, or analytical.
17. M. Mayeroff, *On Caring*, (New York, NY: Harper and Row, 1971), p. 1.
18. The role of care in conjunction with knowledge was recognized even by Greek philosophers such as Plato, Plutarch, and Epictetus. Plato cared for the individual development of his students and recognized the important role he assumed as a tutor of the coming generation of philosophers. In his view, care extended beyond the needs of the single individual teacher to the needs of the student. Through care for people, the philosopher could ensure that the ideas, concepts, and arguments of morals, ethics, and state would prevail over generations. For more on this, see Michel Foucault, *The Care for the Self* (New York, NY: Vintage Books, 1972).
19. In the remarkably insightful writings of Martin Heidegger [*Being and Time* (San Francisco, CA: Harper, 1962)], "care" is the most fundamental concept of explaining how human beings come to terms with the world. Care is what directs attention, at the highest level, to people, events, objects, and ideas. In Heidegger's view, care cannot be broken up into finer detail. Nevertheless, our concern is care in organizational relationships, and we search for characteristics of these relationships.
20. These dimensions are adapted from the work by Mayeroff, op. cit.; and W. Gaylin, *Caring* (New York, NY: Knopf, 1976). So far, to my knowledge, there are no specific studies linking care to knowledge creation. Most works in this area of care tend to center around personality studies, care-givers and care-recipients in parent/child relations, or the relations among friends. Some studies include: N. Eisenberg, G. Carlo, D. Troyer, G. Switzer, and A. Speer, "The Altruistic Personality: In What Context Is It Apparent?" *Journal of Personality and Social Psychology*, 61 (1991): 450-458; C.E. Cutrona, "Perceived Parental Social Support and Academic

- Achievements: An Attachment Theory Perspective," *Journal of Personality and Social Psychology*, 66 (1994): 369-378; M.D. Pagel, W.W. Erdly, and J. Becker, "Social Networks," *Journal of Personality and Social Psychology*, 53 (1987): 793-804. In an organizational perspective, most studies focus on the relations between professional care givers and care recipients in human service organizations like schools, churches, and hospitals. Still, there are many insightful findings that will help to advance the topic of care. Some contributions include S. Sarason, *Caring and Compassion in Clinical Practice* (San Francisco, CA: Jossey-Bass, 1985); G. Egan, *The Skilled Helper* (Monterey, CA: Brooks/Cole Pub. Co., 1986); N. Foner, "The Hidden Injuries of Bureaucracy: Work in an American Nursing Home," *Human Organization*, 54 (1995): 229-237. Providing a deeper understanding of care and its relation to education, I recommend N. Noddings, *Caring: A Feminine Approach to Ethics and Moral Education* (Berkeley, CA: University of California Press, 1984).
21. R.H. Humphrey and B.E. Ashford, "Cognitive Scripts and Prototypes in Service Encounters," in T.A. Schwartz, D.E. Bowen, and S.W. Brown, eds., *Advances in Service Marketing and Management: Research and Practice*, 3 (Greenwich, CT: JAI Press, 1994).
 22. According to Mayeroff [op. cit.], in caring for someone, you also pursue the deeper meanings behind his formulated needs, become sensitive to the needs that are not articulated, and help the other person to articulate his or her needs. Personal interpretations of the other person's needs might be a useful way of going about this articulation process, or alternatively, help the other person to find words whereby emotions and needs can be expressed more effectively.
 23. Maurice Merleau-Ponty, *The Structure of Behavior* (Boston, MA: Beacon Press, 1963).
 24. Social knowledge is knowledge shared among individuals, and it can comprise both explicit knowledge (such as engineers knowing the way to solve a differential equation) or tacit knowledge (such as a group of fashion designers knowing how to keep a "signature" of a design (a clear style) through a variety of different clothes and models).
 25. There is no preemptive generosity: people establish their "value" through long-term trust building. Not given at the outset of a relationship, trust must be built up (if at all possible) through a long process of recurrently demonstrating expertise.
 26. Nonaka and Takeuchi, op. cit.
 27. M. Polanyi and H. Prosch, *Meaning* (Chicago, IL: University of Chicago Press, 1975).
 28. By "equal" is meant that the personal knowledge of each individual matters.
 29. For more on the topic of justice in organizations, see, for example, J. Greenberg, "Organization Justice: Yesterday, Today, Tomorrow," *Journal of Management*, 16 (1990): 399-432.
 30. By removing layers of middle-level management, competition for higher-level positions that are fewer in number is likely to increase.
 31. A case in point is a computer manufacturer studied by C.N. Darrach, "Workplace Training, Workplace Learning: A Case Study," *Human Organization*, 54/1 (1990): 31-41. In this company, asking for expertise on how to solve a task on the factory floor could seriously jeopardize future career moves. The employee had to present himself as competent and reliable, not needing expert advice nor even written personal notes, on how to solve the task.
 32. There are many cases arguing for a strong relation between innovation and tacit knowledge. For example, G. von Krogh, K. Ichijo, and I. Nonaka ["Develop Knowledge Activists!" *European Management Journal*, 15/5 (1997): 475-483] provided a case of the development of a highly successful product requiring tacit

social knowledge—a chicken-deboning machine. A cross-functional team of the Japanese engineering company Maekawa worked in a food-processing plant for several months in order to learn the tacit skills of “chicken deboning.” Sharing this knowledge, the team could articulate the steps and movements in a process of chicken deboning. Based on this explicit knowledge, they created a concept of chicken deboning that became the cornerstone in the design and programming of the machines.

33. Often, traditional incentive systems might have an adverse effect on caring behavior, encouraging individualism and extreme forms of competitiveness. This behavior can be desirable under certain circumstances where capturing and transacting are acceptable processes of knowledge creation (e.g., a newspaper editorial staff). Yet, where the creation of tacit knowledge is important (e.g., for radical innovations in a consumer electronics firm), care-based relationships should be fostered through other types of incentive systems. I am indebted to David Teece for pointing this out to me.
34. This is what M. Hilb called a 360° performance appraisal. M. Hilb, *Integriertes Personal Management* (Berlin: Luchterhand, 1995).
35. Dreyfus and Dreyfus, *op. cit.*, p. 26.
36. A word of caution. Mentoring programs should be designed to prevent emotional burnout among care givers. This effect has been noted among professional care givers such as nurses. See, for example, Foner, *op. cit.*.
37. This case was developed with Wouter de Vries.
38. A first comprehensive test of the knowledge creation theory is already available. See I. Nonaka, P. Byosiére, C.C. Borucki, and N. Konno, “Organizational Knowledge Creation Theory: A First Comprehensive Test,” *International Business Review, Special Issue on Knowledge in Organizations, Knowledge Transfer, and Cooperative Strategies*, 3/4 (1994): 337-351. Specific measures for care as it applies to relationships in knowledge creation still have to be developed using the constructs of “mutual trust,” “active empathy,” “access to help,” “lenience in judgment,” and “courage.”
39. This statement is borrowed from the work of Maturana and Varela, *op. cit.*