and to extract new business insights, allowing them to eventually increase profit and competitiveness in a flatter, more mechanized world.

In addition to technological innovations brought about by its R&D, IBM has always initiated internal innovation-accelerating processes such as global brainstorming. Innovation Jam is one such resource and is held periodically on the internal communication network of the company. In this event, tens of thousands of employees, customers, and business partners all get together to share new ideas, conduct debates, and realize new insights regarding future trends, new services, and more. (See Chapter 6 for many other methods of interactions for sharing and creating knowledge.)

And lastly, acquisition and merger strategies brought about by these brainstorming sessions, among other things, have led to IBM's acquiring of global companies that are also bringing innovative capabilities to the mother company in the form of new products and services. Most of these M&A deals serve to complement and complete services, solutions, and products already at home at IBM.

Example: Rafael—A Strategic Transformation

During 2001 Rafael Advanced Defense Systems Ltd. was officially transformed from a government unit into a commercial, government-owned firm. This was the culmination of years of debates and deliberations with both hope and concern from various stakeholders. The end results, however, were very impressive:

- Within a decade, Rafael turned from a heavily subsidized government unit into a highly profitable company in terms of defense industry standards.
- It attained an important positioning in the global market, while keeping its technological leadership focused in Israel.

Relative to this book, we see the lessons in this example at Rafael as relevant to the connection between strategy and KM. In 2009, statistics on Rafael's position appeared in a newspaper article.[5] The data demonstrated the progress Rafael had made in part because of its transformation in 2001:

- Sales doubled from 2004 to 2009: from $800 million to $1600 million.
- Profits grew from almost zero (about $1 million) a decade ago into about $112 million.
- Its workforce grew from 5,000 employees in 2006 to 6,000 employees in 2009. Younger, niche-oriented engineers, technicians, and programmers made up most of the new workforce.

Analyzing the sources of these success factors from a KM perspective, we can credit several strategic decisions that evolved through the years. The backbone of these decisions was to combine the company's traditional core competencies of technological excellence and commitment to Israeli defense with a sharpened, profit-oriented management and style coupled with better marketing capabilities. This is not a trivial combination, as we see in the following details.

- First, Rafael decided to adhere to its core mission as "a significant contributor to the security of the state of Israel."[6] The consequences of this were not the best for profits over the short term, but were essential to maintaining the values of the organization and its workers (see Chapter 4 on culture) and proved profitable over the long term. Rafael added the value of becoming a "growing and profitable" company to its mission, and succeeded in sharpening its business management.
- Further, Rafael decided to continue being a leading innovator in technology and systems. For them, this meant investing heavily in independent R&D[7] and attracting outside funding (see Chapter 10 on innovation).
- Simultaneously, Rafael strove to retain its human capital (knowledge workers, including leading-edge engineering and scientists, and also experienced technicians with relevant skills). During such major changes at a company, managers are usually concerned that KWs may leave. Some lessons from their efforts to retain workers during change are described in Chapters 4 and 5. While maintaining its important KWs, Rafael also succeeded in recruiting younger generations to join its mission. It used its positive knowledge culture (for more on this, please see Chapters 6 and 7 on knowledge capturing and creation) to efficiently transfer the knowledge of older generations to newcomers, and incorporate them into appropriate teams in order to create new knowledge.
- Lastly, Rafael also listened to its customers more effectively and incorporated their needs by using some of the methods described in Chapter 8.

In summary, even though Tuvya began his KM journey to learn about what is done throughout many different kinds of organizations, he was proud to find that his home organization was a leading teacher in using strategy to improve its own knowledge management.

Conclusion

This chapter highlights the benefits of coupling knowledge management with strategic planning and outlines the positive implications of these two activities working in concert. You have learned so far that for successful KM you first need a business strategy, and then you need to derive from it a strategy for KM. Only then can you start implementing all kinds of methods and support systems. The various examples in this chapter helped to highlight some strategic issues and their implications for the knowledge aspects we discuss in the following chapters of the book.

Please note that strategic planning should be the result of an extensive process, though, and is beyond the scope of this chapter. There is, however, an abundance of excellent literature on the topic available to you if you would like to hone those particular skills, too. To this end, we provide a few suggestions of books in the Notes section to this chapter for your convenience.[8]

The next chapter describes the second prerequisite for knowledge management—establishing the proper culture.

The Magnificent 7

1. An organizational strategy—including a vision, mission, and strategic goals—must be determined and shared as a prerequisite to knowledge management.
2. Knowledge management serves the attainment of the overall business strategy.
3. Strategic management planning in a turbulent environment should draw upon the knowledge of all the workers and should be periodically revisited.
4. If an organization does not have appropriate strategies that link its competencies with the needs of its environment, knowledge management will not help. If, however, the organization has successful knowledge management processes, the chances of developing an appropriate corporate strategy increase.
5. Knowledge management requires a strategy of its own.
6. Engagement is a key success factor in strategy development. Experiment with innovative methods such as knowledge cafés to engage as many stakeholders as possible in the strategic planning process.
7. Spend time on strategy creation before rushing to implementation of new ideas. Strategic mistakes are very expensive. Try to avoid them.

CHAPTER 4

The Role of Culture in a Successful Knowledge-Creating and Knowledge-Sharing Organization

In this chapter you will:

- Learn that knowledge management hinges on developing a system of shared values and norms, and a management style that seeks employees' knowledge.
- Learn that this management style is based on a shared culture, trust rather than hierarchical command and control, and respect for the knowledge of the workers.
- Receive guidelines for embarking on the complex process of assessing your culture and changing it to fit with successful knowledge management.

There is a certain desirable organizational culture with positive values and norms which is a prerequisite for knowledge management. To attain the desired culture, it is your duty as a manager to assess the current situation in your organization and make the necessary changes.

Initially we were not sure if the culture issue was so important that it really required a lot of detail. But the unified message we got from managers we've consulted with convinced us it was a key component of a solid knowledge management process:

Why Bother with Culture? A Unanimous Message

A decade ago, when Tuvya began his study on knowledge management (KM), he went on a tour, visiting various organizations in Europe and the United States. Almost every conversation with each local KM expert began with the same mantra: Without the right organizational culture and values, you cannot have proper knowledge management.

His hosts also seemed to be suspiciously in agreement about what the right culture involved:

- Positive company values that are commonly shared by all managers and employees.
- A management culture that seeks an employee's knowledge, and is based on trust rather than hierarchical command and control.

Tuvya was overwhelmed by the intensity and similarity of the message. Again and again these experts emphasized the same basic ideas: that you need to find common, shared, and positive group values among your colleagues; treat people well and empower them; and refrain from intimidation tactics. While these KM experts might have a common (and more liberal) background, the same message was given by various other people, all expected to present a capitalist or "strictly business" viewpoint:

- When Tuvya met a venture capitalist, he opened by saying, "Well, before we begin talking about knowledge management, I must tell you that the most important thing is having the right organizational culture . . ." (You can guess the rest.)
- Another "strictly business" example is from Pat Sullivan's book *Value Driven Intellectual Capital.*[1] This book is decidedly about economics and extracting dollar value from intellectual capital. Sullivan nevertheless dedicates a full chapter to the same message, describing the "right culture" and emphasizing its importance.

While Tuvya believed culture was important to an organization, he also thought it was self-evident. He assumed that everyone working with—or in—knowledge organizations would see it as obvious enough to not even mention it in too much detail. So why did participants feel the need to push this point over and over? We think there is a strong message here, which should not be considered obvious or trivial, about the need for the right culture and values, and we dedicate this chapter to that message.

The Definition of Culture

Culture is composed of three building blocks: beliefs, values, and behavioral norms. Values hold a central position in organizational culture. They reflect the person's or the organization's sets of beliefs and assumptions about the external and internal environment. They also serve as the basis of the norms that underlie behavior. These norms, and many of the behaviors associated with them, reflect the organization's values. This is why it is so important to address values in managing knowledge—they relate to both norms and beliefs. They reflect backward, since changing values can change beliefs, and forward, by affecting norms of behavior.

Knowledge management involves instilling certain kinds of values in the organization. These values have at their core a high appreciation and respect for individual knowledge, as well as a commitment toward fostering knowledge interactions through mutual trust. An organizational culture that promotes knowledge management is founded on the perception that everyone stands to gain by sharing and creating knowledge. It is a win-win culture, in which both individuals and the organization benefit. Fostering this kind of culture requires that organizations invest in their knowledge workers (as we discuss in detail in Chapter 5) and that their workers commit to the organization's goals.

In this chapter, we elaborate on the development of the shared values that promote knowledge management. Some of the values, such as trust, respect for the knowledge worker rather than hierarchical command and control, and moral identification with the organization's goals, are universal knowledge management values. This means that no matter the size or type of organization, successful knowledge management requires an organizational culture that is founded on these values.

However, the organization also needs to *customize* its organizational culture and values to promote knowledge management in light of its particular characteristics and history. Obviously, by definition, we cannot dictate what these customized values should be. However we do provide a few guidelines for how you can assess your own organizational culture and the extent to which the values it contains promote knowledge management, and how, in collaboration with your employees, you can develop the kind of organizational culture that optimizes knowledge management.

This chapter rests on the assumption that you, the manager, are responsible for implementing an organizational culture for managing knowledge. Knowledge management practices cannot be implemented in an unsupportive organizational culture. They are doomed to fail. Therefore, developing your organizational culture is a prerequisite for successful knowledge management.

Addressing the Nonbelievers

At this point we might risk losing a large portion of our readers because many managers are cynical and skeptical about the importance of culture. Why? Some think the issue is too abstract so, even if they do agree, they aren't quite sure what to do next. Other opponents may recall real events, as well as perceivable frauds, such as:

- *Enron.* There is always someone who mentions how Enron, the benchmark of company frauds, had one of the best-written ethical codes, and a nice set of declared company values.
- *Monsanto.* A lesser-known story is about the chemical industry giant Monsanto. While being a respectable company, from which we can learn even on KM issues, it has had a problem with the way its values were perceived by some of the public. As their PR campaigns touted their values of "feeding the world" and "sustainable development," they could not dodge the criticisms of the thousands of demonstrators who protested against their "industrialized food" and almost put them out of business.

Others may have become cynical after witnessing various attempts and failures to define company values in their own organization or in others. In such cases, they likely experienced an ill-managed process of defining the values of their organization. Sometimes it consisted of too many long discussions, which produced too few declarations, with too little resemblance to reality and with almost zero future effect on the company.

We sympathize with those who make some of these cynical remarks, because sometimes they are well earned. Nevertheless, we urge the skeptics to continue reading and see whether the process can be improved.

The Moral Aspects of Organizational Culture

The moral foundations of the organization underlie and must be established before the specific values related to KM. We believe that it is important for the values that form the basis of an organization's culture to appeal to workers' moral dimensions. This moral element can recruit their commitment by fostering their identification with the organization's goals. It is therefore an important ingredient for knowledge culture.

We usually think of values as belonging to a higher moral realm, as is the case with values of honesty, equality, and fairness. However, in the organizational context, maximizing profit and crushing competition can be defined as organizational values. In fact, sometimes these two types of values contradict, which may make it difficult to articulate a coherent organizational culture.

We illustrate the issue of moral value and its relevance for KM by presenting two examples from Israel. The first one is about Rafael, a well-established organization which could have lost some of its knowledge workers due to changes in mission:

Example: Rafael's Mission

The original mission at Rafael was developing technology for the protection of the state of Israel. It was founded as a unit of the government around 1948 during the Israel War of Independence. The founding generations felt that their homeland was in a vulnerable position, and decided to contribute their intelligence, training, and efforts toward protecting national safety. Their willingness to help protect their country motivated individuals to work for Rafael, although they could get much more comfortable jobs and more recognition in academia, or earn higher salaries in other private companies.

Beginning in the early 1990s, though, Rafael became increasingly oriented toward an economics-based strategy. New values skewed toward profitability arose, and threatened to dominate the initial values Rafael held as a protector of the nation. As Rafael increasingly sought customers outside of Israel, many workers were concerned that their mission conflicted with their development of solutions to Israel's security needs. Typical employee questions included:

- If profit is the true driver in the company in terms of its business decisions, why shouldn't I also seek a higher salary elsewhere?
- Will we continue to work on innovative, cutting-edge projects, or will we just exploit existing knowledge for higher profit?

This clash of values culminated in 2001 when Rafael was transformed into a government-owned company. Many workers began to feel that the old Rafael values with which they identified no longer existed, and these feelings had implications for the knowledge management aspect of the culture at the company. Without higher organizational values with which to identify, and with the prospect of potentially less interesting projects, Rafael managers faced the risk of losing some of their best knowledge workers.

Fortunately for Rafael, it ultimately succeeded in incorporating both values of caring for national security and profitability in its mission. It is a major player in leading national security projects, based on

(continued)

cutting-edge technologies. Its sales volume and value have increased significantly since 2001, both regarding monetary value and qualitative importance. At the same time, Rafael increased its export—up to about 75 percent of its sales in 2009—which created profits and sources for more R&D.[2]

As business continued from 2001 on, employees saw the company's old values being restored and, at the same time, discovered the benefits of working for a financially stable company. Its profitability does not conflict with caring for national security and developing newer technologies. On the contrary, the two components support each other. In spite of initial concerns of conflict in the company's goals, Rafael retained almost all of its knowledge workers (see Chapter 5 for details) because employees are confident in the company and proud that it has contributed to a safer Israel.

This example may make you think about what type of corporate culture you want to foster at your company.

Our second example details a very different organization: the ad hoc consortium that built the Cross-Israel Highway. Understanding its mission and core values was crucial in mobilizing its workers to contribute to the effort and get the project out of crisis.

Example: The Cross-Israel Highway[3]

Highway 6, the Cross-Israel Highway (named after Yitzhak Rabin) is known to most Israelis as a major success story. The highway was a first in Israel in many terms: length, size, superior quality of construction, and extensive environmental protection. Construction of the highway began during the late 1990s, continued through the early 2000s, and was completed earlier than expected (in about five years). This was achieved in spite of many exterior disturbances, created by various serious political issues. Despite these controversies, in the end, it did make the peripheral towns much closer to the center of Israel. It also was a first in terms of business model because it was a toll highway constructed as a build, operate, and transfer (BOT) project with a value of about $1 billion.

Even though it was a high-profile project in Israel, very few people know the inside story about the organizational problems that the consortium building the highway was facing. It was a joint venture of three companies: two from Israel and one from Canada. The consortium suffered from the conflicting interests of the three partners. Unlike the Rafael example, the consortium workers had no common past legacy and expected no common future after completing the project. The combination of the daunting task set before them, the huge exterior disturbances, and the potential for organizational chaos threatened the whole operation's success.

Edna was hired as an organizational consultant on the project and quickly realized there was actually one simple, common value shared by all parties involved: the dream and vision of seeing this highway built and operating. She presented the idea and persuaded top management to intensify the commonality of this vision by adding even more value: Make the dream happen, but also make it happen "on time, on budget, and on spec."

In the end, they were successful in convincing most employees to believe in these values. Of course, just sharing the common values did not solve all their problems. However, it definitely changed the mood of the project, helped workers to overcome conflicts of interest, and encouraged everyone to contribute their knowledge to make the dream a reality.

The lesson of these two cases can be summed up this way: Working toward common values in which one believes and with which one identifies can be an important source of motivation for workers in a common corporate culture. Overall, knowledge management stands a greater chance of success when it is rooted in positive moral values where workers can identify with an organization's goals. While it seems obvious, this moral element must not be neglected and should be a part of any manager's plans for improving an organization's future.

The Practical Aspects of the Right Organizational Culture

There is a saying among management consultants about the differing interactions between managers and workers in the United States and Israel. It's anonymous, and goes something like this:

> *In the United States, when a manager just makes a suggestion, his workers consider it a decision;*
>
> *In Israel, when a manager makes a decision, his workers consider it just as a suggestion . . .*

This joke, stereotyping both cultures, demonstrates the dilemmas in defining and implementing the right organizational culture that are discussed in the following section.

Does Your Management Style Seek an Employee's Knowledge?

To utilize an employee's knowledge, you must have a management culture that actually seeks it. Obviously, the culture must be based on trust rather than hierarchical command and control.

Pat Sullivan's book, mentioned at the beginning of this chapter, dedicates a section to the relation between management style and willingness of employees to innovate, create, and share knowledge.[4] Figure 4.1, adapted from his book, shows the evolution of management style from an authoritarian stance to a more open one, and the respective employee response.

Obviously, authoritarian and hierarchical management style is undesirable for any KM culture. Employees will obey orders (grudgingly) and will not contribute their own knowledge. As the style becomes more and more open, employees take more responsibility, creating and innovating new knowledge.

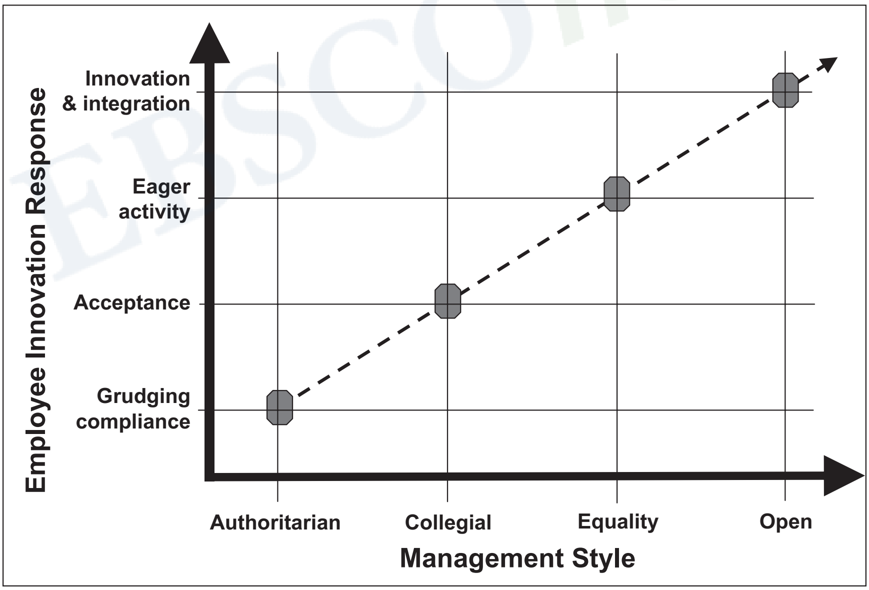

FIGURE 4.1 The Effect of Management Style

Source: Adapted from Patrick Sullivan, *Value-Driven Intellectual Capital: How to Convert Intangible Corporate Assets into Market Value* (New York: John Wiley & Sons, 2000).

While we argue to move out of an authoritarian style of management, we do not advocate a fully open style as the ultimate goal. Usually, some hierarchical control must be exercised, so we will probably choose some style in the middle. Hence, one of the key challenges in customizing a knowledge management culture and a set of values for your organization entails deciding on the extent of freedom that you will grant to individual workers.

The optimal style is therefore customized for every organization overall, and even for each department within that organization. Take Intel, for example. Intel is a company that boasts a free and innovative culture in its research and development departments. But at the same time, Intel uses the restrictive slogan “Copy Exactly” in its worldwide fabrication plants, where changes in its mass-produced chips are frowned upon.[5]

The optimal style may also need to be customized depending on the situation. For example, organizational behavior consultant Dr. Ichak Adizes advocates that every organization should immediately change from democracy to dictatorship when it makes a major decision:[6]

- Employ democracy before you arrive at a decision; in this way you exploit the organization’s knowledge by asking every relevant player for input and collecting various opinions.
- Use dictatorship after you have decided; then everyone must follow.

Dr. Adizes’ example is obviously an exaggeration of an extreme change of style in a very short time, just to prove the point. More realistic changes are described in the paragraphs that follow.

Organizations may vary in their actual positions with respect to the desired optimal style of communication between a company and its workers. In many cases, the optimal style may also need to be amended depending on the most current situation. Figure 4.2 presents a visual representation of this issue. It shows how the goal of every organization should be to maintain its culture in the medium “optimal” zone by using the management style appropriate to it.

Many knowledge management experts suspect that many companies are still trapped in the bottom zone of this figure, which is too authoritarian and restrictive. This is why everyone Tuvya met on his benchmark visits emphasized the culture issue (as described in the beginning of this chapter). For many companies, this top-down management style was appropriate in the industrial age, but the modern knowledge economy requires making adjustments. Even being at the forefront of modern management techniques does not guarantee that you are in the optimal zone of management style. For example, top management is often more committed than middle management to freer forms, so work still needs to be done on creating a change vector, like curve A shown in Figure 4.2.

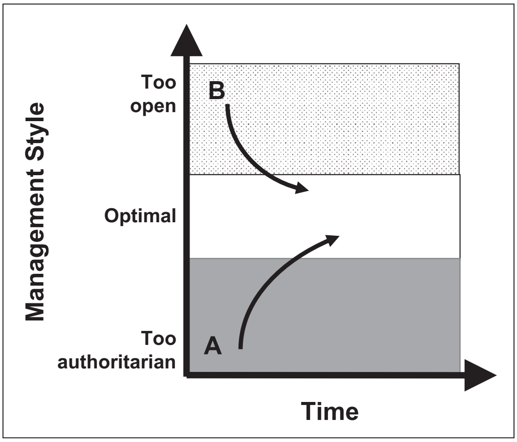

FIGURE 4.2 Management Style—Change Vector in Time

Some organizations actually suffer from the opposite problem. For Tuvya, it was obvious that organizations need the right culture and values but that was because he grew up in an organization (at Rafael) with an open culture and managerial approach. His organization, however, may have been in the top "too open" zone. Some of Rafael's departments were managed like academic institutions, with too much freedom for an organization that is supposed to deliver products. Preaching for a freer style was dangerous for them, and might have driven them even farther from the "optimal" zone.

In recent decades Rafael instituted changes along curve B in Figure 4.2, increasing planning and awareness of business considerations. Most people consider it as a success, because it made Rafael more efficient while retaining many of the good ingredients of the knowledge culture. Others warn against it as an overshot. They claim that their departments are too strict now. In their opinion the change to vector B has gone too far into the bottom "authoritarian" zone, and Rafael needs to loosen up a bit.

In summary, the right culture and values are relative, and should be customized to the specific needs and situation of each organization. You need to define what the right zone is for your organization, and assess where you are with respect to the desired zone, then take the required steps for a change.

Do You Encourage Knowledge Sharing?

The willingness to share one's knowledge is obviously a necessary condition for successful KM. But why would employees not keep information to themselves about what they do? The answer has many implications, as we detail in the following example about BP Amoco.

EXAMPLE: THE KNOWLEDGE-SHARING CULTURE AT BP AMOCO A leading example of a positive knowledge-sharing culture is BP Amoco, an energy company with over 100,000 employees. It is a company that successfully instilled a knowledge-sharing culture, one that helped it to survive two mergers in recent years. *[Please note: At the time of this writing, the disaster from the April 2010 oil crisis in the Gulf of Mexico was just beginning, so while we know this company is now facing major issues, this example is still a positive one specifically regarding the opportunities a knowledge-sharing culture can bring to its employees.]*

> In the 1990s, BP Amoco established peer groups in which leaders from different business units met to discuss common challenges and how they faced them.[7] The peer groups were initiated by John Brown, who was then a division head and, since 1995, had also been CEO. With time, the groups increased their added value by focusing on results, not only sharing knowledge for their own sake. The groups assumed responsibility for allocating capital resources among business units in the group and for setting unit performance targets.
>
> In general, business unit managers at BP Amoco have a two-part job description. The first part has to do with managing their independent profit-loss units according to traditional business and managerial performance criteria. The second part has to do with engaging in a variety of cross-unit knowledge-sharing activities that are expected to consume between 15 to 20 percent of their time. As described by Hansen and von Oetinger,[8] this system creates "an open market of ideas," whereby people know where expertise lies and feel free to get help directly from the relevant sources. In a knowledge-sharing culture, managers do not have to go through headquarters when they face a problem; they can seek assistance from their peers and be sure that they will receive the information they seek.

BP Amoco managed to successfully instill an organizational value for its employees, one that is the foundation of many behavioral norms and practices of successful knowledge-managing companies: knowledge sharing. Most smart people want to be recognized for their intellectual capital. Therefore, they possess a natural need to share their knowledge. In fact, often it is the organization that prevents knowledge sharing, not individuals. Just as the organization can stifle knowledge sharing, it can also enhance it, as in this case at BP Amoco.

EXAMPLE: THE KNOWLEDGE-SHARING CULTURE AT RAFAEL Another example of a knowledge-sharing culture is at Rafael, and its story seems too good to be true.

> Rafael is blessed with a knowledge-sharing culture. People are usually happy to share their knowledge, whether with new workers, colleagues, or managers. Knowledge sharing is widely practiced throughout the whole organization. There are some isolated islands where people do not share knowledge, but they are just exceptions to the rule. In Tuvya's various encounters with workers, they almost always voluntarily praise this facet of Rafael. It is a heritage that has survived decades of transitions there.
>
> While Rafael is probably not the only company with such a culture, it is quite unique. In most high-tech industries and start-ups, people do collaborate but many times keep some information to themselves as a power source. We got accustomed to the knowledge-sharing behavior at Rafael but we cannot claim that we have done something intentionally to promote it—it just works. Obviously, managers and employees there have been doing something right for many years. It is something we had better understand in order not to spoil it.
>
> But what is it, exactly? There are several possible answers which work together to become effective:
>
> 1. Employees have a tenured working contract, so people are not afraid of losing their position of power.
> 2. Workers share common moral values.
> 3. There is a positive management style employed throughout the company and its levels.
>
> Overall, the best answer as to why Rafael's culture is so positive is probably a combination of these answers. Also, the old, semi-academic management style of the original Rafael culture, though not really in practice any longer, contributed to a heritage of knowledge sharing—a heritage passed down from generation to generation of workers. But we cannot know the precise combination that makes this positive culture thrive, as many other organizations with similar characteristics to Rafael did not achieve the same results. At Rafael, the knowledge-sharing culture has definitely become a part of its genetic code.

From a managerial standpoint, the value of knowledge sharing reflects an organizational belief that when workers share knowledge, the organization saves time and resources and prevents reinventing the wheel. The workers also stand to gain by sharing knowledge, and managers should make sure that they realize this fact. The value of knowledge sharing will be embraced by workers when they internalize the benefits it offers, including visibility, attractiveness, recognition, and better chances of promotion. If managers do not believe that knowledge sharing creates benefits for an organization, or if the individuals within the organization do not believe that it is to their benefit to share knowledge, knowledge will not be shared. At BP Amoco, both managers and workers developed an appreciation for the personal and organizational gains associated with sharing knowledge, and those benefits continued to amass over time.

Managers can do a lot to foster the perception of mutual gain from sharing knowledge and promoting it as a behavioral norm.

- First and foremost, they can serve as a personal example. This is probably a major factor at Rafael.
- As was done at BP Amoco, management can make sure to grant time and resources for knowledge sharing to occur. In part, this involves the promotion of *communities of practice*, groups of people who interact in order to share and create knowledge. In Chapter 6, we elaborate on the nature of communities of practice and how they can be managed to promote the value of knowledge sharing.

Another important managerial practice is rewarding knowledge sharing and group effort in addition to providing incentives for solo work. We discuss this point extensively in Chapter 5. In times of economic slowdown, people become increasingly afraid that if they share their knowledge they will make themselves redundant. It is important for managers to realize that under these circumstances, no knowledge management project will succeed. Only if knowledge sharing is rewarded, if the knowledge sharers become heroes or champions, will it become pervasive. When knowledge sharing becomes associated with recognition, individuals have an incentive to share their knowledge.

Another point relates to the moral dimension of culture discussed earlier. Workers are much more likely to share knowledge if they support and identify with the organization's mission and overall values. Identification with the organization's goals fosters a feeling of comfort and safety in sharing one's knowledge with others.

Making Innovation Inherent to Your Organization's Culture

The value of innovation is an inherent part of a knowledge management culture. Innovation as a value is about fostering knowledge creation, rather than merely knowledge sharing. Although Chapter 10 is devoted exclusively to innovation, we would like to also emphasize here that it is a core value underlying managing knowledge to create the organization's future.

Managing current knowledge assets is not a sufficient goal of knowledge management. Organizations need to create new knowledge and innovate in order to create value for the company. Knowledge assets age fast, and overly reusing existing knowledge implies taking the risk that it may become obsolete along the way.

What should a manager do to foster a culture of innovation? The first step is to demand it from yourself and your workers. Feature quarterly reports that include a section looking forward by requiring descriptions of "something new" in the relevant areas of a department's expertise. It may be a new technological achievement, a new process, or new customers. Middle managers usually track the development of these initiatives if they are asked to outline them on a quarterly basis. Beginning with a vague requirement for "something new" may suffice. At later stages you could improve the questions by aligning the "new" with more measurable improvements (more on this in Chapter 10).

Innovation is never a 100 percent sure success. Managers must accept the risks and let knowledge workers (KWs) continue innovating. Some ingredients of a true knowledge culture that a manager should encourage include:

- Situations employing trial and error—sometimes these are the only way to get results quickly.
- Attempts at new methods of doing things and allowing failure, as long as it is the result of positive risk-taking.
- Colleagues to take on local entrepreneurship, and more autonomy so that workers can reach beyond their job descriptions in searching for new knowledge.

Trust and a Win-Win Environment

Trust is both a value that can and should be promoted by the organization's management, and it is the invisible glue that holds together a knowledge managing organizational culture. Without trust, the other values cannot be implemented. Trust is what enables a worker to feel free and safe enough to share his knowledge and to make mistakes on the way to discovery. It also lies behind management's willingness to forego strict control in favor of a more relaxed environment and granting workers free time to interact, ponder, and learn. The value of trust implies that managers and workers believe in the mutual benefits of knowledge management and are willing to embark on the challenge of sharing and creating knowledge together.

This is why a complementary value to trust is the perception of *win-win*. Without a win-win approach, knowledge management won't succeed. Mutual benefits are the key to successful KM, and every knowledge management practice should be implemented with this in mind. Workers should feel that they stand to gain from sharing and creating knowledge.

The following is an example of what can happen when the values of trust and win-win are not internalized. In this case, knowledge management is stifled.

Example: The Kibbutz Member Who Did Not Trust

A kibbutz is a collective community founded on socialist principles. In a kibbutz-owned factory, most of the workers are also members of the community and have deep social bonds outside of work.

In one of Israel's kibbutzim, a chief technologist refused to share his knowledge with the younger chemists who arrived from the university, even though some of these newcomers were the children of his friends. On the surface, it wasn't clear why he should feel threatened by this younger generation, particularly in light of his personal connection to them and membership in the community that owned the factory. But from his perspective, he was afraid to share his knowledge.

He did not trust that the organization would keep him once he shared his knowledge, and he did not see what he stood to gain by sharing it. He thought, "They just want me to teach them what I know and then they will send me home. As long as I have the knowledge, I stay. I'm the troubleshooter. As soon as I start sharing the knowledge, I'm on my way out."

This type of crisis within an organization illustrates two major problems that instilling the right culture of trust and win-win should eliminate:

1. The KW had no trust in the organization. To share knowledge, a KW must feel secure that the organization will continue to value his contribution even after he has trained others.
2. The KW saw knowledge sharing as a win-lose scenario, whereby the organization gains his expertise while he is rendered redundant.

> Organizations can turn this perception around, even in times of downsizing and job insecurity, by illuminating the gains to be had by a knowledge-sharing culture. In this win-win paradigm, when you teach others, you also learn from them. The knowledge, skills, and know-how you gain make you more employable and increase your relative competitive strength in the job market.

We discuss these issues in more detail in Chapter 6.

Tailoring Values to the Company's Knowledge Needs

The values we have discussed so far are fundamental knowledge management values relevant to every organization: seeking worker knowledge, knowledge sharing, innovation, trust, and so forth. However, successful knowledge management in your organization may entail additional values, depending on the particular nature and history of your organization.

Take, for example, the value of speed or agility. Speed is a value for many companies operating in a dynamic market, where time-to-market determines success or failure. It may be less relevant in other companies that value top performance. Essentially, anything that the organization places as foremost is a value. Each organization needs to tailor its culture and values according to its character, industry, and strategic goals.

From Preaching to Practice

Practicing what we preach about values is not very simple or straightforward. How do you define the right culture and values for your organization? How do you assess where you stand relative to them?

Defining the right culture might seem easy, but it is not. Most managers are educated enough to devise some positive-sounding mission statements and declare solid values for the organization. They are also sensitive enough to managerial trends not to outwardly promote a strict and hierarchical management style.

But let's face it, it's difficult for any manager to self-assess. Many managers may not notice the gap that all too often exists between their declared values and how they actually behave. They may not realize they are blocking their colleagues' contributions. Even if top management does practice what it preaches, middle managers may not (or vice versa). So if we do not know where we are, how will we know where to go? This is where the difficulty lies, and that is what causes the cynical attitude toward values that we've discussed in this chapter.

Awareness and Active Listening

If it is almost impossible to objectively assess our own values and management style, what do we do? Our two best pieces of advice are *awareness* and *active listening*. We hope that reading this chapter has been a major step toward increasing awareness. Active listening has several facets, including these:

- Ask questions instead of giving directions. Asking questions signals you are appreciating your employees' knowledge and looking for their contribution. Usually you will get the same answers that you would have given, but with the added value of workers' commitment. Sometimes you get better answers. Remember that seeking employees' knowledge is one of the essential values of a KM culture.
- Applying active listening to the problems in finding core values and creating a better management style does not mean "do it yourself." Make it an organizational discussion of the actual issues and formulate the desired discussion.
- Ask your employees, colleagues, and superiors about their view on issues. Entrust capable people from your organization to initiate the conversations for you, or hire an organizational consultant, hoping they will be able to pose questions and get frank answers.
- Have a respectable committee to assimilate the findings into a draft statement of mission and values through consensus.
- Make sure to get sincere comments on that draft from as many workers as possible (meetings, surveys, etc.)

All in all, this may seem like a long process, but these discussions are necessary to establish the common and shared values accepted by a whole organization.

Conclusion

This chapter on culture concludes the second phase of our KM journey, and completes the groundwork for the knowledge management practices presented in the remainder of this book. If you refer to Figure P.1, you can see that Chapter 2 presented you with the concept of intellectual capital and its value-creating potential; Chapter 3 placed knowledge management within the larger perspective of strategic management; and, finally, this chapter discussed the importance of fostering an organizational culture based on values that promote successful knowledge management.

We feel that the topics from the first few chapters represent the foundation of knowledge management because they provide a broad perspective of the importance of KM and how and why it works. Without this foundation, KM becomes a series of isolated interventions that are doomed to fail. With it, the knowledge management practices presented in the remainder of this book can be implemented for attaining a sustainable competitive advantage.

Now, on to the third phase in the knowledge management journey—description of the various viewpoints of KM, beginning with the central one—the human focus.

The Magnificent 7

1. Becoming a knowledge company entails developing shared values with which workers can identify and a management style that seeks employees' knowledge.
2. The basic building blocks of a knowledge-sharing culture are respect for workers' knowledge, trust, a perception of win-win, and innovation.
3. Many elements of organizational culture that promote knowledge management (including specific values, norms, and management styles) are actually different for each organization in accordance with its character and needs.
4. Managers should conduct a self-assessment to determine the extent to which their culture enhances or stifles knowledge sharing and creation.
5. Managers should identify what is the optimal balance between control and freedom in their organization and actively seek to attain it.
6. It is the manager's responsibility to instill the culture and values that promote and support knowledge management in collaboration with subordinates.
7. Through awareness and active listening, managers can create a culture that seeks each employee's knowledge and contribution.

CHAPTER 5

The Human Focus

Understanding and Managing Knowledge Workers

In this chapter you will:

- Understand that the success of a knowledge company is based on the proper management of its knowledge workers (KWs).
- Learn how to make the organization attractive to knowledge workers so that they will be motivated to join and remain.
- Gain tools for enlarging the workers' knowledge.
- Develop techniques for encouraging knowledge workers to share and contribute their knowledge.

The knowledge worker (KW) is obviously the center, and the main asset, of every organization based on intellectual capital. Managing KWs is one of the core capabilities of an organization. By *managing* we mean all relevant aspects including recruiting and retaining workers, developing their skills and potential, encouraging them to create and share knowledge, and more.

The issue of managing KWs has a very wide scope and appears in many contexts:

- Much of modern thinking on managing human resources (HR) either deals with KWs or promotes similar processes for all workers.
- Almost every aspect of knowledge management requires attention to managing KWs.

We have already discussed the necessary style of management of such workers in the consideration of culture in Chapter 4, and we refer to it in almost every subsequent chapter in this book. In this chapter we focus on issues that involve human resources methods that can be used toward refining the management of knowledge workers.

We begin by discussing the unique identity of the knowledge worker: What is a *knowledge worker*? What are their unique characteristics? Then we describe what happened to KWs during the most recent bubble economies because they served as unique situations in which to examine some of the issues managers invariably come across in managing KWs. Finally, we offer managers practical strategies as well as advice on the implications of issues relating to the effective management of KWs.

Is Every Worker a Knowledge Worker?

When deciding who is a knowledge worker, the usual examples may include researchers and scientists in academia, engineers and software experts in high-tech industries, doctors and nurses in hospitals, smart businessmen and businesswomen who lead revolutions in various branches of the retail market, and others like them. Are all of these, and positions similar to them, the only workers considered to be knowledge workers? There are different views on the subject and after reading this chapter, you can decide what definition is most suitable to characterizing KWs in your organization.

Before we get into the views, we thought we'd mention a couple of Hebrew slang expressions—"big head" versus "small head"—which might inform the discussion, in hopes of arriving at a common definition. In Israel, a "big head" worker is always looking for ways to solve problems creatively within an organization. Rather than just following routines and guidelines to the letter, he takes on more responsibility and decision-making duties than is required by the basic job description. Conversely, a "small head" worker just sticks to his outlined duties consisting of specific tasks, procedures, and a smaller span of authority.

We think every worker in an organization has the capability of being a "big head." Most workers can manage new situations by drawing upon various personal and organizational resources, whether they are at the top or bottom of the ladder. This is becoming more relevant as the world becomes more turbulent and unpredictable.

Any kind of worker can be a "big head," but knowledge workers are required to be so. Managers need to work at "enlarging" the minds of all of their employees to make them into knowledge workers. And, as this chapter illustrates, a managerial style that is too authoritative, strict, and intolerant of initiatives essentially "shrinks" the minds of subordinates, whereas a managerial style that encourages autonomy, trial and error, and creativity "enlarges" the minds of the workers.

The Most Common View: Only Knowledge-Creating and Nonroutine Workers are Knowledge Workers

Many managers believe there is value in making a distinction between knowledge work and manual work. They see a distinction between routine and nonroutine work. Knowledge workers are measured according to how creative they are—how much new knowledge they generate, and how fast they generate it (this is sometimes referred to as *talent management*).

Such managers claim that, although manual workers possess knowledge, ultimately they work on routine tasks. Although they know how to operate the robots in the knowledge-rich industrial organizations for which they work, they are still not the same as knowledge workers who are inventing all the time.

Promoting processes geared to manage knowledge creation and innovation requires a different kind of management style for knowledge workers, as discussed in Chapter 4. This is the group that requires special management attention, as will be discussed later.

Tuvya's View: Almost Every Worker Is a Knowledge Worker

Tuvya opts for a wider definition of knowledge worker. He maintains that if intellectual capital (IC) is the main asset of the organization, then many workers may hold parts of the IC of the company. Here he offers perspective on this question by relaying a story from his work at Rafael, where the issue of defining production workers as manual laborers became an almost explosive one—literally.

Rafael's Explosives Workers

When Rafael was converted from a unit of the government into a government-owned company, many of the company's group contracts had to be revised. Much thought was invested in the new contracts of scientists and researchers and less attention was given to the employees who worked on the (seemingly) simpler manual tasks, like laborers tasked with producing explosive materials.

Initially, top management did not consider the laborers producing the explosives to be valuable knowledge workers. The renewing of contracts seemed like an opportunity to direct many of them into early retirement and/or to replace them with younger, cheaper workers.

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The middle managers overseeing the laborers of the specific department warned, though, against a possible crisis if the laborers were to leave. It is true that one doesn't need a university degree for the routine work they were doing (and working on explosives should definitely be as prescribed and routine as possible). However, working on explosives does require experience, and their expertise was gained over time. These longtime laborers at Rafael possessed a unique knowledge, one that could be seen as crucial for both current ongoing production processes and for researchers developing future processes. After top managers looked into the knowledge and experience of the laborers, eventually their contracts were upgraded to reflect their true importance as being a part of the organizational IC.

The lesson we can learn from Rafael's situation is clear but not trivial. Although it is true that the core competencies of the organization are usually held by a relatively small number of knowledge workers, the organization stands to benefit significantly by seeing every worker as a knowledge worker. Think of customer service clerks with a high-school education and only a few years of experience in your company. Chances are that they have knowledge that you want to disseminate into the organization, no matter their background. During their tenure, they have probably become creative problem solvers, and if they have not, then you should make sure that they become knowledge creators and knowledge sharers in the future. Knowledge creation and knowledge sharing are not the exclusive property of R&D departments or only certain types of workers. You do not want robots working for you. You want creative, motivated people coming up with initiatives for improving processes no matter their level.

Knowledge Is in the Eye of the Beholder

A forerunner in IC and KM, Dr. Susan Stucky, manager of the Institute for Research and Learning (IRL) in Menlo Park, California, adds another perspective to the debate. She believes that our perception of what a knowledge organization is, and who its knowledge workers are, may not coincide with the day-to-day events of a worker's reality. She described her view in an interview[1] with Tuvya, using the following two examples from an anthropological study of people at work done at IRL by Dr. Brigitte Jordan.[2]

Both of Brigitte Jordan's studies examined routine work processes (i.e., without much invention or creativity occurring). But in spite of this,

The Dynamics of Medical Teams during Births

The first example reviewed an obstetrics ward and how not all knowledge collected was used or shared. The mother-to-be was the central figure in this example. Nurses usually spent many hours with the women and gained important knowledge about them and their individual cases. However, in the end, the nurses ended up having less decision-making power than the doctors who were treating the patients when it came to the birth. Often the knowledge they accumulated during their time together was not considered to be as relevant as the doctor's when it came to the actual birth, and many times their knowledge did not even reach the doctors. In this example, the doctors were the final authority and decision makers, even though they did not necessarily have all of the pertinent knowledge.

The Dynamics of Teams Working on Passenger Jets

The second study examined various kinds of teams working in an airport, preparing a passenger jet for take-off. These teams worked together, helping each other reach solutions to common problems having to do with maintenance, logistics, food, luggage, and much more. A lot of information flowed directly between workers—without the mediation or involvement of the manager—using open radio channels or in group discussion. While there was a formal hierarchy, most decisions were made collaboratively based on relevant data available to all.

Stucky and Jordan point out how the airline teams actually engaged in more knowledge management processes than did the hospital workers. This goes against what one would normally assume considering doctors and nurses, because they are generally thought of as important knowledge workers in a strong, KM-minded organization. Nevertheless, the airline made better use of its human capital by valuing the cumulative knowledge of its workers.

Obviously this debate was not included to confuse the reader but to illustrate the various kinds and levels of knowledge workers in various organizations. Managers need to customize their definitions of KWs, and the methods of improving their overall knowledge-creation and knowledge-sharing processes, in order to tailor them to the specific needs of the organization and the people within it.

Shaking Up the Balance of Power: Lessons from the First Bubble Crisis

The issues of managing knowledge workers are well illustrated by the two most recent bubble economies. From the point of view of KWs, we see that both bubbles were characterized by start-ups luring KWs from established companies by offering them inflated salaries and even more inflated job descriptions. The following two examples demonstrate the most important lessons learned. (By the way, such economic crises are bad for employers and employees but good for book authors! Seriously, though, they do magnify certain types of problems and make solutions clearer than in more stable times.)

Here, Tuvya recalls some anecdotes from the first bubble crisis in Israel, many of which are probably typical for knowledge companies globally, especially when going through chaotic KW transitions.

Lesson 1: The Breach of Trust

Tuvya's first anecdote demonstrates the inflated salary offers at that time and their influence on the mutual trust between employers and employees:

The Temptation of Inflated Salaries

In the early 2000s, my son, then a fresh university graduate, got a job in a high-tech start-up. Surprisingly, his salary and benefits were quite similar to my own, despite the fact that I was holding a senior position at Rafael after several decades of experience in the industry.

As in many other companies at the time, some departments in Rafael were severely affected by start-ups leaching talent away with these exaggerated offers. Departments with knowledge workers in high-tech professions (software engineers, electronic communications experts, and algorithm developers), that were courted extensively by start-ups and were hit badly at the time.

Because Rafael was then a government unit, it could not be as competitive with salaries as the start-up groups. Trying to convince people to stay by mentioning the advantages of Rafael in both technology and tenure was ineffective with young engineers, who were being offered twice the salary and a better title than what they could get at Rafael with years of experience. Even older engineers were ready to forgo the benefits of their tenured jobs rather than pass up what they saw as the opportunity of a lifetime.

The breach of mutual trust may be a possible insight from the experience of the first bubble. Knowledge workers become increasingly mobile, moving from organization to organization, from project to project, based on where the higher salary and/or professional interest lie. Loyalty to the organization seems a thing of the past. In those years, small start-ups lured workers with stock options and dreams of instant wealth. Some of the larger organizations found themselves with an acute shortage of workers in the middle of a project, with deadlines looming. The workers' lack of identification with the organization's goals was a clear breach of trust.

In light of the ensuing slowdown in the high-tech industries, however, it appears as if the tables had turned. With numerous start-ups going under, the larger, more stable organizations were in a powerful position vis-à-vis the worker. And unfortunately, some were abusing this power and acting in trust-violating ways. For example, some U.S. aerospace industries have undergone massive layoffs, often letting go of employees who spent many years specializing in professional areas that are specifically suited to the company. The layoffs were claimed to be inevitable, but other companies, such as Southwest Airlines, opted to cut costs in other ways, including salary cuts, rather than breach the mutual trust they had worked so hard to establish.

This sad insight, while not giving immediate clues as to how to manage KWs, is nevertheless important as a perpetual warning for both sides:

- Employees now understand better the advantages of working in stable organizations as opposed to volatile start-ups.
- Organizations have learned to keep investing in their employees in both good times and bad.

LESSON 2: THE IMPORTANCE AND MOBILITY OF KNOWLEDGE WORKERS Tuvya's second anecdote demonstrates the special importance of knowledge workers:

The Fight on KW: Intel versus Rafael versus Start-Ups

During the crisis, there was tension between Rafael and the Israeli branch of Intel Corporation. While not competing in terms of customers, Rafael and Intel Israel competed when it came to knowledge workers. A team leader from Rafael ended up leaving for a job at Intel and later convinced about 10 other electronic engineers from his team to join him at the new branch, thus almost completely closing an important knowledge center at Rafael. Eventually, reconciliatory talks between Intel and Rafael led the then manager of Intel Israel, Mooly

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Eden, to visit Rafael and give an unforgettable lecture on the hemorrhaging of employees to competitive start-ups.

In the speech it turned out that, while Rafael was suffering in only a few departments, Intel was in a much worse situation overall. Being in the core of the high-tech industry, almost all Intel workers were prone to courtship by an array of start-ups. Many Intel workers were strongly tempted, and the ramifications of their workers leaving were much more widespread at Intel than at Rafael.

While start-ups were portrayed as the bad guys, their quest for KWs was not easy, either. Imagine a well-intentioned entrepreneur, finally receiving money from an investor to develop his brilliant idea but having no engineer to work with. And imagine the extra frustration, after finding such an engineer, to see him leaving after several months for a better-paying employer.

The lesson here is unforgettable: Knowledge workers are the main assets of the organization and are not easily replaced. Sometimes just one of them abandoning the organization may cause a disaster, let alone more than one of them leaving.

Knowledge workers have a high mobility as their expertise is usually desired by other organizations and especially by competitors. Hence they have lots of opportunities outside your organization and should be cherished. You cannot force KWs to stay, but you must make them want to stay. This is a difficult mission for managers.

The Aftermath

The aftermath of the high-tech bubble was ugly. Many start-ups collapsed, especially those that didn't have a firm business strategy. Upon collapsing, obviously their KWs were laid off (including Tuvya's son). Major existing companies also had difficult times. Some of them, like Southwest Airlines and Applied Materials, tried to save their KWs by reducing salaries and taking other cost-cutting measures. Others, like some aerospace companies, seized the opportunity to lay off workers. Because times are so chaotic during economic bubbles, we cannot entirely rely on them to examine conventional HR practices, but we can use the circumstances to study how relations change between KWs and their employers when times are tough.

Lessons learned from the first bubble include the culmination of a change in the psychological contract between KWs and their employers. The psychological contract represents all of their beliefs about the nature of their employment relationship. In the prebubble days, the psychological contract outlined that employers were caretakers of the employees. Employees who were good performers were guaranteed a job until their retirement and were offered career paths within the organization. In return, employees were loyal and committed to the job and the organization over the long term.

Post-bubble, the new psychological contract outlines that organizations no longer have to offer long-term employment. Employees are responsible for their own career development. Their commitment to the work and their professional development has been replaced with a short-term commitment to the job and to the organization for however long they are there. The new contract implies that when workers contribute their knowledge, they expect to gain something in return, especially increased employability.

The concepts of employability and the need to retain KWs are both crucial for the success of an organization. Exploring these concepts leads to important advice about managing KWs. We elaborate on this at the end of this chapter.

Lessons from the Second Bubble Crisis

The second bubble, while having colossal impacts on the world economy, was more benign from the point of view of the high-tech industry in Israel. It was significant enough to require specific action regarding retention of knowledge workers, yet small enough to examine the effectiveness of the conventional HR methods we would use in regular times.

Lesson 1: Retain Your Leading KWs

The upside of the second bubble began in Israel at the end of 2007 and the beginning of 2008. It was more pronounced in real estate and financial institutions, just like in the rest of the world, but some prosperity also began to show in the high-tech sector.

Tuvya recalls the threats of that temporary prosperity on retaining knowledge workers, and how they were tackled:

Rafael Efforts to Retain Leading KW

In the upside of the second bubble, early 2007, it took some time to identify that there was a problem. At Rafael, probably like in any other large organization, there is always talk about the grass being greener

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(and salaries being higher) on the other side. But eventually it was clear that the number of workers approached by outside employers, offering generous salaries, was larger than usual, and we asked ourselves, “what should we do?”

The initial remedy against the second bubble’s effects was learning from the lessons of the first. Workers of all ages still remembered the gloomy times of the high-tech bubble and were more reluctant to leave a stable organization and an interesting job for a dubious future, even when offered higher salaries and/or fancy titles.

But learning from history was not enough, and we took some additional proactive action. When a worker begins to shop outside for a job it may be too late. So we identified our leading knowledge workers (the “talent,” especially those in professions desirable to outside companies), and worked in two ways to ensure they were happy with us:

- *Compensation.* We examined salaries and upgraded those who were lower when compared to the relevant market. A small raise, initiated by the employer, has a greater positive effect than a higher raise requested by the worker to match an outside offer.
- *Job satisfaction.* Middle managers were required to talk with leading KWs and make sure they were happy with their jobs. Do they like their current project assignments or are they bored with them? Do they wish to continue doing professional work or want a management position or other career path? The findings required us to make some changes.

The result: Almost no people left during the second bubble, at least not above the usual rate (which is usually very low in Rafael).

The actions taken are actually almost the same used as part of a healthy, regular routine in HR’s management of every worker. The bubble simply required us to perform them more frequently for the selected leading KWs.

Lesson 2: Recruit More Leading KWs

Rafael also tried to exploit the downsizing occurring in other companies as a result of the second bubble by using it as an opportunity to recruit some high-profile KWs, with some surprising results.

As many readers know, the world economic crisis began in autumn of 2008 and has continued into 2010. We are not going to speculate how and when it might finally end, but Israel's economy has survived quite well. Nevertheless, there were some layoffs and caution among new investments.

But as Rafael had a rather successful year in 2009, the managers were thinking the second bubble was an opportunity for recruiting stars who were leaving less successful companies. The following is Tuvya's experience:

Are the Stars Out There?

We were naively thinking there were many star KWs out there, laid off from various failing companies. Unfortunately our search did not yield lots of success. Yes, for every open position, junior or senior, there were more applicants than usual. But "stars," and even only "very good" KWs, were quite rare.

We suspect that most companies that did not collapse were doing their best to retain their stars, and the "very good" KWs were sticking to their job, hesitating to make a bold move.

Hence, from the point of view as a manager in Rafael, Tuvya was disappointed at the lack of recruits he could gain from the shakeup. But from a KM point of view he was happy to realize many companies had learned a lesson from the first bubble: Although they are in trouble, they are trying to hold on to their leading KWs.

The Aftermath

Regarding the management of KWs, the lessons learned from the second bubble crisis are less dramatic than the first. However, they are more optimistic and more relevant to a KW's day-to-day behavior. Lessons from the first bubble were reemphasized in the second, and both KWs and employers learned something valuable:

- KWs should be more cautious about leaving a stable job.
- Employers should be more cautious about laying off KWs even in difficult times.

Overall, these lessons should be used as methods of managing KWs in regular times as well as economically challenging ones.

The Challenge of Retention

The previous examples establish the challenge of attracting and retaining knowledge workers. Organizations spend considerable resources in an effort to hold on to workers with important knowledge, and yet the high turnover rate among these workers remains. Organizations compete for quality workers just as they compete for customers, and they need to invest the same kind of creative effort with their workforce as they do in marketing and sales promotion. In light of constraints on an organization's ability to raise salaries, we need to apply other concepts as well.

Just like customers, workers differ greatly from each other in their needs. Organizations can apply the concept of customization from the world of the customers to the world of human resources. Whereas some workers are concerned about salary, others want more free time, others desire to study, and still others need to meet family obligations. The organization will benefit from exhibiting flexibility in meeting its workers' needs.

Usually knowledge workers have personal contracts, where both employer and employee can untie their relationship at will. Actually there are some checks and balances that usually stabilize these relations and enable knowledge culture. But we have seen that in some situations, like the bubble crises, these checks and balances fail.

Retention Tactics

Organizations can experiment with different kinds of links to KWs, some of which are loose and others which are more binding. We will mention two of them here while summarizing that the challenge of retention always exists, no matter what the form of contract between the employer and the KW.

- *Tenure.* The old system of tenure for lifetime employment still exists in some places: academia, government institutions, and also businesses in some countries. Rafael, for instance, employs it. Tenure can be both great and devastating for knowledge management. On the one hand, it enables the trust required for a positive knowledge culture. But, on the other, it may allow employees to languish, which limits management's flexibility in pushing an employee to do his best.
- *Options.* The modern, well-known practice of offering a worker stock options renders the worker a partner, while simultaneously confining him to only benefiting when the company benefits. The worker many times remains in the organization not because he enjoys the work but because he does not want to miss the opportunity to exercise the options.

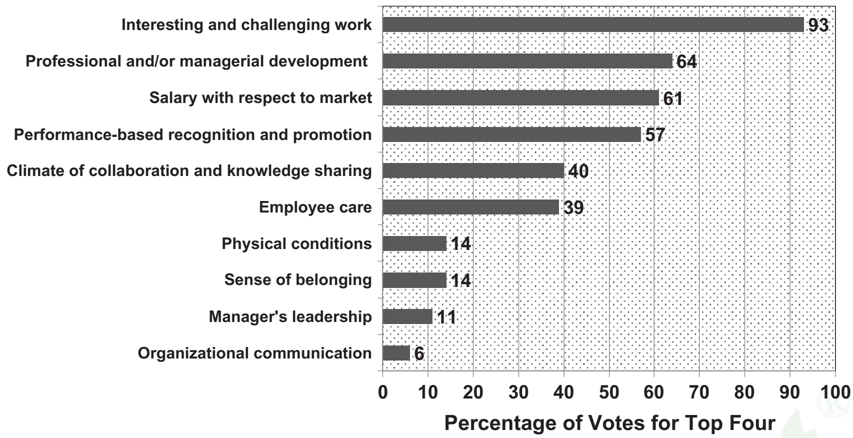

FIGURE 5.1 Relative Importance of Various Elements of Job Satisfaction
Source: Rafael Advanced Defense Systems Ltd.

Is Salary a Main Factor?

If you conduct an informal survey, the majority of responders will probably answer yes. Unfortunately, we have seen many veteran managers think the same.

But knowledge workers think otherwise! Anonymous surveys checking on job satisfaction at Rafael were conducted among thousands of workers. Figure 5.1 shows the typical results in one department when employees were asked, "What are the top four factors affecting your job satisfaction?" Employees stated "interesting job" as the main factor keeping them at their jobs—93 percent of responders put it in the top four! Further, from the results, we can see that salary was not even one of the leading two factors—and 40 percent did not put it in their top four! Other knowledge organizations worldwide usually report similar responses: Salary is not the main factor affecting job satisfaction. This should lead managers to consider taking care of the other important indicators like encouraging work on interesting assignments, and so on.

However, managers should beware of using such surveys as an excuse not to care enough about the salary of knowledge workers. In 1997, a report from the Israeli State Comptroller demonstrated what happened when managers put too little emphasis on salary:[3]

Obviously, KWs consider appropriate salary, in a scale comparable to the relevant market, as a necessary condition to their job satisfaction. Only

Example: An Electronics Company with an Outdated Salary Scale

A government-owned company,* specializing in aerospace electronics, had a promising book value as indicated by decent profits and a reasonable backlog of orders. The State Comptroller noticed, however, numerous anomalies in the structure of the workforce: An inadequate salary scale resulted in aging engineers within the company receiving higher salaries than engineers hired through a manpower firm, whereas young engineers were paid less than their external peers.

Not surprisingly, this illogical system resulted in a self-sustained destructive process, whereby young engineers were not attracted to the company. The aging R&D force was gradually losing touch with the latest advances in technological innovation.

*Not Rafael.

when this condition is fulfilled will they look at job satisfaction as the discriminating factor. In the following section, we present some factors affecting job satisfaction.

Keeping KWs Interested Throughout Their Career

We have already shown that knowledge workers must have interesting and challenging work in order to be effective and productive. They need an intellectual challenge, otherwise they suffer. We assume an organization fulfills this prerequisite at the start, and then we try to help it avoid the pitfalls that may change an otherwise great workplace into a boring routine.

What makes one's work interesting is not fixed and permanent. It can vary among different KWs, and it may change for the same person in different stages of his career. Inadequate assignment, or neglecting career development, may make a good KW unmotivated and/or drive him to leave. The goal of this section is to share experiences about such pitfalls and show your organization how to avoid them.

Edna confirms that small organizations cater to changes in a KW's preferences and hopes for a career path. She says:

> *We sometimes recruit university graduates who serve as assistants to our senior consultants while learning their job's skills. After a few years of experience, and usually another degree, these consultants then have*

their own assistants who relieve them from routine work. The young and inexperienced workers are happy to be assistants and learn from the more senior consultants, and the latter enjoy the ability to focus on the more interesting part of their tasks.

For a small firm, continuous growth is a must or people will outgrow their job and leave for positions outside the firm. When a larger organization faces similar problems, it might use different solutions due to the differing environment and scale. Larger organizations have both larger obligations and larger opportunities for career development. They usually like to retain KWs for many years, and have a variety of opportunities to offer them. A KW usually begins as a young university graduate, learning the basics of his profession in school and then continuing along one of two basic paths:

1. The professional path. A KW may continue developing his expertise as a professional. An organization will usually invest in advanced training, encouraging him to study for a master's degree or PhD, and involve him with ever-increasing and renewed challenges. Many organizations award their experts appropriate titles, like "professional fellow," in recognition of their importance to the knowledge organization.
2. The management path. The KW may move to any of the many managing positions a large organization has available, managing groups of professionals ranging from small teams to larger departments, leading projects, moving from R&D to manufacturing and vice versa.

These paths are not totally separate. Some KWs will likely move from one path to the other and back along their career. In a knowledge organization, for instance, most managing positions usually require some professional experience.

MAKE EVERY ASSIGNMENT INTERESTING OR MEANINGFUL It is a challenge to assure every KW's assignments are interesting. Again, we assume most of the work an employee does is attractive to him. But what do we do with the less attractive parts?

Edna offers a rather simple solution she's found from managing her consulting firm. She says that she offers consultants the opportunity to work on projects that interest them. If a project is not assigned, it is outsourced. Thus consultants do not find themselves working on tasks that they don't want to do.

In a large organization you cannot always use Edna's method of looking for volunteers for every assignment and outsourcing what is rejected. Tasks are usually interdisciplinary and people collaborate with many others. Everyone wants new, exciting projects, but there are always less attractive, more routine projects that are equally important.

Fortunately, in a properly managed knowledge organization, there are many complementary methods to cope with this problem.

- *Achieve commitment.* When workers are committed to an organization, and to its current project, they will be ready to do the more boring and routine parts of the work. Workers should feel that they serve a mission and that they contribute to a whole, though their goals should be reevaluated along the life of their career path.
- *Incorporate the full life cycle of a project as a necessary professional experience.* In order to grow up as an expert knowledge worker, you need to go through all the various phases of a project. At Rafael, projects go on for years, and KWs participate in them from preliminary studies through detailed design to final tests. Thus a KW experiences the full circle of design and the lessons learned, undertaking both fascinating and tedious parts alike.
- *Change a KW's job.* Moving from one position to another every several years stops the feeling of routine and injects new motivation and new challenges into a KW's daily work. When a KW is advancing from team member to team leader, even though he may be doing the same kind of work, he is getting new perspectives and new interests. This emphasizes the importance of establishing career paths, as discussed earlier.
- *Enrich a routine or make it a reserve duty.* Engineers usually prefer to develop new products rather than provide technical support for the departments manufacturing or maintaining old ones. However, these departments, which usually create most of the sales and profits for the company, must have expert technical support. At Rafael, they have responded to this type of situation using two methods:
  1. Keep the engineering personnel in manufacturing departments to a minimum, consisting mainly of people whose expertise and interest are in general manufacturing processes.
  2. Solve technical problems in manufacturing specific products by temporary mobilizations of the best engineers who had developed that old product, even though they are now working on a new product. Mobilizing the best engineers assures the best solution for manufacturing the old product, while keeping such duties in reserve for a short time is not devastating to the new product and does not hamper worker motivation.

In conclusion, we see that there are many methods to help enrich assignments that are unpopular with KWs. It's much like the saying about changing diapers: No one enjoys it, but when it is your baby, it somehow becomes a part of the joy of parenthood.

CREATE AND MAINTAIN A FULL KNOWLEDGE MATRIX One of the main goals of managing KWs is to avoid a situation where an entire organization is relying on one person, or a small clique of experts, who solely hold the critical knowledge of the organization.

In Chapter 1, we described the case of Nathan, the irreplaceable technician. He was the only one who knew how to maintain an old simulator that was essential to his department's work. When he decided to retire, his managers faced a knowledge vacuum in a critical organizational function.

Edna has run across similar phenomena in some of her client's organizations, and has identified it not only as extremely dangerous for an organization, but also as very bad for KWs themselves. While some enjoy this source of power, others understand that being stuck in the same activity hampers their professional development. Hence it contradicts the "keep them interested" mantra mentioned previously.

The situation of irreplaceable employees may be prevented if management continually checks the knowledge matrix of the organization or its various departments. The rows of this matrix consist of a list of the various competencies of the department, and the columns are the names of the employees. Whenever you have only one employee holding the knowledge of some competence, you are in trouble. In many cases you might even want more than two.

Although keeping the knowledge matrix full seems obvious, one usually finds all kinds of understandable but unjustified objections:

- For the manager, and their clients, it is always more convenient to keep the knowledge of certain products or processes all under the same veteran.
- Similarly, a KW with a power position may be reluctant to share his knowledge, and other KWs may not want to learn old stuff.

However, all parties—managers, clients, and KWs—must understand that investing in an effort to increase the knowledge matrix now will eventually yield an enormous force multiplier for all of them. It is a must for long-term survival of an organization. If you do it early enough you will encounter less resistance for knowledge sharing down the road, and you may even find your KWs have more enthusiasm for learning new things.

Show Interest in Your Knowledge Workers

Top management must show interest in their knowledge workers (their *talent*), even if they are not direct subordinates. This message is usually true for any kind of worker, but it is especially important for KWs. This acquaintance satisfies a KW's need for recognition and makes them more secure about their future role in the organization.

REGULAR MEETINGS WITH KNOWLEDGE WORKERS Having regular meetings with KWs is one way to strengthen the bond between managers and KWs. Such meetings may be formal or informal, as described in the following examples:

Cellcom's CEO Informal Meetings

Amos Shapira, CEO of Cellcom, the largest cellular phone company in Israel, tells about his informal way of keeping acquainted with Cellcom's leading KWs:[4]

> *"I cannot imagine a situation in which I am the only one who suggests ideas. Workers, even the most junior ones, have lots of knowledge and experience and should get every chance to express them. This is why I always hang around in the corridors and near coffee machines, and during lunch I sit with the workers and not with the managers (who do not like to eat with me [their boss] anyway . . .). However, it is not enough for a CEO to be available and hang around the workers. If you do not look friendly enough—who will approach you?"*

Rafael Manager's Formal Weekly Visits

The late Gadi Barak managed a division of about 1,000 workers at Rafael. He used to conduct a weekly visit to one of the sections in his division (about 40 people). He brought along to these two-hour visits an entire management team.

The goal of the visit was to maintain a two-way communication, and a major part of the visit consisted of engineers and scientists presenting their current work. The exposure created rapport among the managers and its leading KWs.

SPECIAL CARE OF STAR WORKERS Some companies take special care of their star KWs, including giving them exposure to corporate management. However, it must be carried out carefully in order not hamper the delicate balance between top management, middle management, and the star KWs themselves. The following are some examples to illustrate the issue:

Pinpointing the Stars

A global semiconductor corporation headquartered in Europe, with about 45,000 employees worldwide, decided in 2003 to define its top employees as a special elite group. This group of about 500 people consisted mostly of star knowledge workers and some potential executives.

The stars in this group were removed from the responsibility of the local managers in their country, and were managed by a special unit in the central headquarters location, reporting to the CEO. The rationale was that local managers might hamper the advancement of these stars because of various local interests, while a central unit with global perspective would do a better job in taking care of them.

Initially the group idea was a success. The stars were receiving training, personal development, mentoring, and special benefits. They were invited to conferences with top management and enjoyed the personal attention, elevating their performance and motivation.

Eventually, however, the experiment failed. The central unit could not really take care of the people in local situations, and it was in continuous conflict with local management. Most members of this international group of stars were eventually confused by being managed both locally and centrally, and the experiment was discontinued.

Interviewing the Stars

In early 2000, Rafael's CEO asked his managers to identify the 50 brightest and most promising scientists. He recognized that the organization's future depended on the brilliant workers and accordingly began taking personal care of them. He interviewed each one of them about their feelings, their expectations and how they were being met, and their desires and needs.

There was a debate about the effectiveness of this action. The attention made the KWs feel special and probably contributed to preventing some of them from being tempted to leave the company during the first bubble. However, division managers and other middle managers resented being circumvented, and claimed it confused KWs.

Overall, star KWs are a key asset of an organization, and both top managers and middle managers must ensure their development and satisfaction. Exposure of KWs to the CEO and top management is an important part of managing them. However, even the brightest KWs must have only one manager at a given time. Ultimately it is the middle managers who should be following the progress of these workers, while the CEO and top management should make sure the middle managers are managing their teams effectively.

Keeping in Touch with Knowledge Workers Who Leave

When the employment relationship ends, organizations stand to benefit from maintaining contact with their former workers.

Retiring Knowledge Workers

A simple case is with people who have reached retirement age after a long-term service with a company. Most successful KM companies keep in touch with retiring workers, especially when they are the top KWs. Here are two examples from Monsanto and Rafael.

In a 1997 interview, Bipin Junnarkar (formerly head of knowledge management architecture at Monsanto) relayed that Monsanto requested a select number of its retiring experts to continue their relationship with the company:

> *They did not have a full-time job, but were expected to work one or two days a week on average as consultants. They were given laptop computers and access to the company's intranet and e-mail so they could work off-site. Whenever there was a problem and their advice was needed, they were contacted by the company. They were paid for their work, but the retirees also said their main compensation was of feeling rewarded from the intellectual interest and staying challenged after retirement.*[5]

Similarly, Rafael employed a system like Monsanto's (but without some of the technological perks like laptops). Initially, many Rafael retirees volunteered to continue working in a consulting capacity with the company. This went on for years but eventually evolved into a Monsanto-style system: Those who were really needed, and worked particularly hard, got paid through a partial employment arrangement.

Alumni Networks

A seemingly more complicated case is when a worker leaves in the middle of his career, for a different job or even to a competitor. However, it still would benefit an organization to develop an alumni network—actual or virtual—with him (just like universities do with their graduating students). Such an alumni network would be available to help the organization with questions or concerns regarding knowledge or finding the right contacts whenever needed.

Edna offers this example from running her consulting business:

> *Being the owner of a small organization, I must accept that some workers will eventually leave. However, I was a little disappointed when a capable and likeable worker told me that he did not want to continue being a consultant. Although he could continue with us, he wanted to become a marketing manager and began looking for a job.*
>
> *Instead of stalling his benefits and advancement, I chose to help him. I redefined his role as marketing manager for my office, to help him receive experience in the relevant field. He eventually left, but remained a friend that I will always be able to count on later.*

Rewarding Knowledge Creation and Sharing

Is knowledge creation and dissemination something that managers should reward? Or should the organization see it as a basic obligation of the employee that does not require additional incentives? We present two extreme answers to this question.

On one end, Patricia Seemann, formerly director of knowledge management at Hoffmann-La Roche, thinks that knowledge belongs to the organization.[6] Hence sharing is a basic obligation of the employee. If a knowledge worker does not share his knowledge, he is essentially stealing from the company.

At the other end of the spectrum are some union leaders. They claim that workers are human capital and they own the knowledge. Thus if management wants to make changes or lay off employees, they believe they should pay the workers for the knowledge they have accumulated.

We are not going to elaborate on this debate because the answer is probably somewhere in the middle. There must be some form of reward but it is up to the employer and the KW to settle on the terms, whether psychological or in the form of monetary compensation. Rewarding cannot be decoupled from related subjects discussed in other chapters of this book, however, such as:

- Maintaining a positive culture plays a major part in motivating knowledge creation and sharing (Chapter 4).
- The means toward creating healthy space for interactions of knowledge creation and sharing usually have some element of reward and recognition (Chapter 6).

With that said, here are some examples of how to reward such behavior.

Example: The Academia Way

In academia, there is a very decisive method of reward for creating and sharing knowledge: "Publish or perish." At universities, there is a direct relationship between how much knowledge you create or share and your possibility of promotion. Eligibility for promotion is usually decided upon by a committee of peers, including recommendations from experts outside the university.

Can we use such a system in the industrial or business environment? There are not too many existing examples to learn from, though Rafael did employ such a program at one time. In a semi-academic promotion system for KWs, it required the work done by an employee to be documented in technical reports. The KWs' promotions were then based on the quality of their work, as evidenced by the reports and assessed by experts both inside and outside the company.

The system definitely rewarded and encouraged knowledge creation, sharing, and codification, as described later in Chapter 7. However, it had some major disadvantages: It moved some of the authority for promotion from the company manager to external experts, and ultimately underestimated the importance of teamwork and/or management assignment (because employees were being evaluated independent of those things).

The system was eventually abandoned when Rafael transformed from a government unit into a government-owned company with different work contracts. While we see the positives of the heritage of some past practices at Rafael—like some of the major contributors to its knowledge culture—we cannot recommend such semi-academic reward systems in a business environment.

Types of Compensation

When you do choose a reward system, you can choose among a few different types in order to encourage knowledge creation and sharing. Some examples include hard (or explicit) compensation and soft compensation.

Hard compensation can entail incentives such as:

- *Bonuses.* IBM offers a bonus package that is shared between those who create knowledge and those who use it. Skandia used to give bonuses according to the extent a department met its IC indicators, and the system included some valuation of the knowledge creation aspects of KWs' jobs in addition to their financial performance.
- *Access to others' knowledge and data.* At Toyota, knowledge about production is available to all of the component suppliers in return for their knowledge and data.
- *Promotion.* In many large consulting companies, a consultant is promoted to partner based on peer recommendations regarding the extent of his knowledge-creation and knowledge-sharing capabilities.

Soft compensation can entail incentives such as:

- *Community membership.* Some organizations offer employees the opportunity to be a part of knowledge communities, in which knowledge is shared with everyone within their group.
- *Establishing a personal reputation among peers.* This can be an important soft motivator. Studies have found that placing emphasis on researchers' publications in pharmaceutical development companies raises the number of new products that are introduced in the market.
- *Personal gratification from helping others.* Some people really enjoy teaching and helping others and use this as their motivation, nurtured by their employers, in helping to create an environment rich in knowledge sharing.

Conclusion

This chapter dealt with the most important concept in knowledge management—the knowledge worker. We learned that ideally we can strive to make any kind of worker a knowledge worker (a "big head"), but we will usually have a more unique group of workers constituting the human capital of an organization.

We then described the challenges of retaining these types of workers in good times and bad. Retaining KWs requires the continuous attention of managers at all levels of an organization. Managers must continuously ensure that KWs are kept busy with interesting and challenging work, that they receive recognition and credit for it, and that their compensation is appropriate. We hope you can use the examples we've given here to respond to challenges you might face and customize them to the environment of your own organization.

The next chapters deal with additional concepts important to KM, all connected to the human focus.

The Magnificent 7

1. Although any kind of worker can be a knowledge worker, knowledge workers have unique characteristics that stem from their need to be creative and the nonroutine nature of their work.
2. Organizations compete for quality workers just as they compete for customers, and they need to invest the same kind of creative effort as they do in marketing and sales promotion in attracting knowledge workers.
3. The two bubble economies, of early 2000s and late 2000s, demonstrate the challenges of retaining KWs.
4. The organization must keep its KWs interested and challenged throughout their career.
5. When workers share their knowledge, they expect some kind of compensation in return. Managers can provide both hard and soft types of compensation.
6. Managers should prevent situations in which one person alone holds critical knowledge. They also need to make sure when they downsize that they keep those workers who hold key knowledge.
7. When the employment relationship ends, organizations should maintain contact with their workers and continue to tap their knowledge through alumni networks and hiring them as freelancers and consultants.

CHAPTER 6

Managing Interactions for Knowledge Creation and Sharing

In this chapter you will:

- Learn that knowledge creation and sharing occurs primarily through social interactions within communities.
- Understand the manager's role in promoting interactions and removing personal and organizational barriers that hinder interactions as the basic means of knowledge management.
- Gain specific tools for building the infrastructure and implementing the processes to promote these interactions.

Interactions via formal and casual meetings or via other numerous forms are the primary arena for knowledge creation and sharing. This is because by interacting with one another, people not only *share* ideas but also generate new ones that they would not have come up with if they were engaged in the tasks alone. Thus, we claim that managers should expend considerable effort toward facilitating these interactions: encouraging, promoting, and nurturing them.

The necessity of interactions is not obvious to everyone, as the following typical debate at Rafael shows:

CoP Meetings—a Must or a Waste of Time?

Michael, a department manager who is responsible for several sections, has been complaining that one of his section leaders "insists on wasting two hours a week on unnecessary section meetings." At these meetings, Michael complains, "All twenty busy section members spend precious time talking about who knows what, with no immediate benefit, while doing nothing to meet their own tight deadlines."

"But," Michael's colleague Saul reminds him, "this is the very same section leader you recently recommended for an award! I recall you boasting that he has built an outstanding section. You may also recall that in another section, which you consider the worst in your department, the leader never holds section meetings. Is it so unreasonable to imagine that the opportunity for people to get together and talk is beneficial and maybe even obligatory for the success of the section?"

You probably guess that we side with Saul on this debate. This chapter is dedicated to convincing you of the importance of interactions and shows numerous methods to encourage them.

We begin with an explanation of the social context of knowledge creation and sharing and explain why these must happen through interactions. We also discuss the barriers that may prevent them, such as the conflicting demands on employees' time. Essentially, we claim that managing knowledge is about managing interactions within communities of knowledge workers.

The manager plays a key role in promoting and enhancing these interactions. He must support both one-on-one interactions and group activities within knowledge communities. Hence the chapter continues to describe and discuss various methods and techniques that managers can utilize to achieve these ends. We offer numerous examples of organizations that increased the extent of knowledge creation and sharing by managing interaction communities.

The Social Model for Knowledge Creation and Sharing

In various organizations around the world, skilled and highly regarded managers unknowingly use an assortment of methods to manage the social aspects of knowledge processes, without a systematic understanding of the secret of their success. Fostering knowledge sharing and creating through interactions between workers is essential to any practical implementation of knowledge management. But successful implementation hinges on an understanding of why these methods work or fail.

Tacit Knowledge

The reason that interactions are so important for knowledge management is that they allow for the exchange and creation of tacit knowledge. *Tacit* knowledge is different from *explicit* knowledge, which is documented or written in a codified and explicit form. Tacit knowledge is inside people's heads. Tacit knowledge is expressed in responding to new situations and problems, thus creating new knowledge (which you may later codify).

The most effective way to acquire tacit knowledge is in learning by doing. Often tacit knowledge is disseminated in dyadic (one-on-one) situations, in which newcomers to a job learn the ropes of their new role. Mentoring programs often formalize the process (we expand on mentoring in Chapter 7). Another way is to enable everybody, who may not be new in the organization but new to a specific problem, to tap the experience and tacit knowledge of the best experts in the organization (see the later section on "Yellow Pages").

Communities of Practice—the Basic Instrument of Knowledge Creation and Sharing

Communities of practice (CoPs) are a social model whose basic claim is that learning, innovation, and collaboration are social processes. Hence the creation of new tacit knowledge is usually achieved through interactions in forums larger than the dyad, and is best performed in CoPs.

CoPs are networks of people who have common interests, share a field of specialization, have known each other over a period of time, and trust each other. Therefore it is natural and easy for them to share and create new knowledge, either as a group or as individuals inspired by the group.

The CoPs may have different forms:

- They may be formal, like a successful professional team of mechanical engineers in an organization, or informal, like a group of middle managers from various departments of the organization with some common interests.
- A person may belong to several CoPs, like the mechanical engineer from the previous example who is also a middle manager.
- They can usually be identified. However, they may be difficult to manage, especially if they are not a formal team.

Making the most out of CoPs requires managers to enact sophisticated tactics that reflect an understanding of the social processes of knowledge creation and sharing, and how these processes operate in their organizations. An example of one of the oldest organizations making good use of the CoPs concept is Oxford University (although its founders probably never heard the term *CoPs*) shows:

Oxford University's Communities of Practice

Oxford is a brand name in the academic world, for a reason. For 800 years, Oxford University has been managing its knowledge in an exemplary manner. What is the secret of its success? Part of the answer lies in enabling knowledge interactions.

Oxford students are simultaneous members of two knowledge communities, both of which are intensely nurtured by the university. On one hand they are members of an academic department, such as political science, literature, chemistry, or economics. These departments host seminars and tutorials for transmitting knowledge in a discipline and researching new areas. On the other hand, every student and faculty member belongs to a college, which is a close-knit interdisciplinary community. In the colleges, members study, teach, eat, and live together. They participate in special activities in the evenings and on weekends. Historians share ideas with medical students; law students discuss legal issues with mathematicians. Within each of these knowledge communities, students and faculty engage in frequent interactions of knowledge sharing and creating.

These interactions raise the chances for each person to break free from narrow disciplinary conceptions. They enable and promote breakthrough thinking and creativity. Oxford University's communities of practice are a prime example of how an institutional environment can promote those interactions that generate knowledge, without compromising the quality and quantity of individual work.

Balancing Interactions with Individual Work

The CoPs model claims that since learning, innovation, and collaboration are social processes, enhancing knowledge creation and sharing in groups can be achieved through social means. That includes all kinds of meetings: staff meetings, lunch breaks, and other social occasions, both formal and informal. Hence the first obvious conclusion of the CoPs model is this: We need to encourage conversations and meetings between people in the organization.

The proper cultural environment begins with a basic organizational value that should be shared by managers and employees. This value relates to the need for everyone to balance their time between personal assignments and networking with others. Whereas every worker needs to fulfill her own assignments and is appraised based on this performance, she must also be allowed and encouraged to network with others. She should have time to discuss ideas, share knowledge, and consult with peers and managers. If implemented properly, this value motivates people to help others with their assignments, thereby promoting mutual learning.

Workers, however, differ in the extent of their willingness to share their knowledge with others. This is why you need to create the proper environment to encourage them to share their knowledge. That is the focus of Chapter 4, on culture. This is also the reason you need to create personal incentives to share knowledge; that is the heart of Chapter 5 on the human focus. But even if you have created incentives and a proper cultural environment, you still have to help employees balance their individual and group demands.

A familiar example for the attainment of this balance comes from the academic world, which is based on a culture of knowledge creation and sharing. The activities of students and professors are aimed at sharing and creating knowledge. Collaborative work, in the form of publishing papers, participating in seminars, and teaching, is encouraged and credited. Researchers keep track of each other's work through visits, seminars, and conferences, supplemented by an informal exchange of written material. These knowledge-sharing activities are balanced with the academic researcher's personal work. The preceding story about Oxford elaborates on how the famous university promotes interactions of knowledge creation and sharing.

In the corporate world, this balance is more difficult to attain. Unlike in academia, CoPs in the corporate world are not always well defined. The checks and balances between personal work and communal work are harder to establish. Many managers do not recognize the importance of formal and informal meetings, and sometimes even despise employees who network because they might be neglecting their own work. This is complicated by the fact that in some cases they are right—some workers do abuse their freedom to interact with others. Thus, if you want to achieve a proper cultural environment, you need to find the right balance between solo time and communal time.

The proper balance is delicate. Figure 6.1 provides a visual representation of the balance needed. Workers who only invest resources in their own assignments, either because they are uncooperative or because management does not allow them, are at the bottom, too solo zone, of the graph. Those who network too much are at the top, too social zone, of the graph. The optimal or right zone is different for each organization, and may vary for different departments of the same organization.

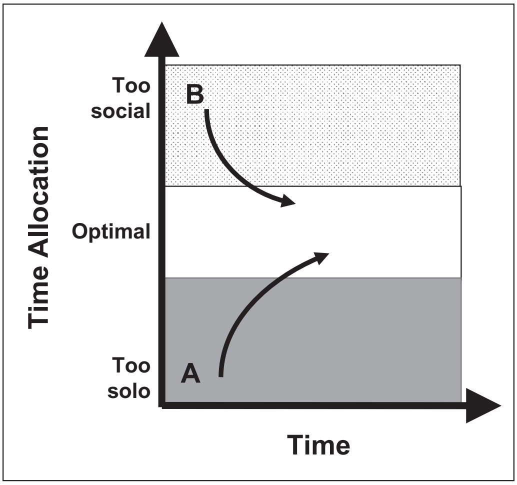

FIGURE 6.1 Time Allocation Vector

Defining the optimal zone, and changing the organization culture over time to attain it along vectors A or B, is no easy managerial task. It requires an understanding of your organization and creative utilization of a repertoire of techniques. But, as we have argued through the CoPs model, it is worth the effort. Nurturing the balance is the key toward creating an organizational culture in which knowledge flows between people and innovation is enhanced.

Having established the social context, and how to reach the right zone, we next describe various forms of interactions.

Extracting Tacit Knowledge—the Corporate Yellow Pages

One of the most common problems in knowledge management is how to find expert help when we have a problem. No matter how trained and experienced our workers are, they cannot know everything. Most of us come across new problems and questions, and the organization has to help us find answers.

One of Tuvya's motivations for studying knowledge management was the case of Ron, a veteran expert whose potential contribution was becoming less and less known to its peers (see Chapter 1). It turns out that many knowledge companies face this problem. When an engineer or scientist encounters a professional obstacle, what does he do? Who does he turn to for professional answers to a problem not encountered before? A similar problem was faced by Monsanto, as described by Bipin Junnarkar, former head of knowledge management at Monsanto:[1]

> *Monsanto, a large chemical manufacturer from St. Louis, has chemical plants that operate 24 hours a day. If there is a problem, someone needs to fix it, and fast, because these urgent problems stop the entire production process. Monsanto struggled with the question of how to guide and expedite the solution of these costly problems. Trying to foresee every kind of problem and writing guidelines for recommended solutions is not possible, as new and unexpected problems will always arise.*

Some managers dream about smart software that will answer all the questions. Well, it is difficult enough to systematically codify the existing, explicit knowledge (we have dedicated Chapter 7 to this problem). To have a prepared written answer to every question that arises, or to codify and anticipate every problem in advance, is impossible.

The most efficient way to solve a novel problem is to ask an expert. The expert transfers her tacit knowledge by giving advice on how to solve it. What the organization can do is to facilitate interactions by making the tacit knowledge available to the appropriate users. The solution that Monsanto and many other companies have found is an organizational directory: a list of experts that identifies their areas of expertise and how to reach them. Since the mid-1990s, for reasons you may guess, almost every organization we know has nicknamed its directory the "Yellow Pages" (and probably nowadays would call it by some variation of a term used on Facebook).

Composing Yellow Pages for the organization is a relatively easy task from an information technology point of view, but a rather challenging task from a cultural point of view. The task involves addressing two cultural issues: (1) How do you identify and choose the experts, and (2) how do you ensure that the experts are available and willing to help in spite of their own busy schedules? Various companies have found different solutions to these problems.

- *Monsanto.*[2] Monsanto assigned "expert roles," whereby being an expert was part of the job description. If you are an expert on something, it is your duty to assist when your expertise is needed. Thus, if there is a crisis in the plant, you are called in to solve it. In Monsanto's solution, the company itself determined who was an expert in each topic.
- *Hoffmann-La Roche.*[3] Hoffmann-La Roche used a sociometric referendum. All the employees were asked to indicate who they turned to for advice when they faced different kinds of problems. They used the

results of this survey to assign the experts in the yellow pages. This method increased the accuracy of the yellow pages, but it also did another thing. By flattering the experts and giving them social recognition, Hoffmann-La Roche gained their willingness to help.

An interesting result of this survey was the discovery of an employee, Rudy, as one of the key sources of knowledge in the company. Rudy was a worker with no official status and recognition. In fact, he was under consideration for layoff because he "did nothing but chitchat."

This story highlights management's potential ignorance of the invisible webs of interactions of knowledge sharing among workers. Sometimes communities of practice are invisible. In this case, crucial tacit knowledge was held by a key figure who was greatly appreciated by his colleagues but underappreciated by his superiors. The management was unaware of his knowledge function until they asked their workers who they turned to as their source of know-how.

- *National Semiconductor*.[4] National Semiconductor used a give-and-take scheme, based on their excellent electronic library. If workers wanted to subscribe to and enjoy the data, they had to indicate what their areas of interest and expertise were. They also had to commit to answering questions about these areas. This method is essentially an exchange of knowledge gifts.

Managers may be disappointed to learn these various solutions, longing for the ultimate method that solves the problem of codifying tacit knowledge once and for all. Moreover, many managers think that their organization is too small to need such a directory. Tuvya was one of those frustrated managers until he was convinced otherwise by what he learned in his own organization:

- *A production department in Rafael.* The manager of one of the production departments at Rafael wanted to create a list of the design and manufacturing experts, who could be called upon to help him solve problems during manufacturing or maintenance. So he put together a directory. He assigned the names according to their functional duty in the organizational structure. The manager in question had never read about company Yellow Pages, but you can probably guess how he also named his directory . . .

Figure 6.2 summarizes the preceding findings. Many organizations with different tacit knowledge problems all arrived at similar conclusions: rather than expecting to codify tacit knowledge, it is wiser to grant the worker the resources and means to interact with the sources of tacit knowledge that are relevant to them. They all use the same brand name of the "Yellow

Different Problems	Same Solution	Different Method for Nominating Experts
National Semiconductor Professional advice		Library subscription
Intel Corporate profile		Role assignment
Monsanto Plant problem	→ **Yellow Pages** →	Role assignment
Hoffmann-La Roche Professional advice		Sociometric referendum
Rafael Product support		Functional assignment

FIGURE 6.2 **Different Approaches to Creating Company Yellow Pages**

Pages" but find different methods to solve the two basic cultural issues of locating and motivating the experts.

Enhancing Interactions in Communities of Practice

Until now, we have discussed ways in which managers can help connect people who are otherwise not connected, in order to foster interactions between them. But, as we have claimed, some of the most important interactions for knowledge creation and sharing occur within communities of practice (CoPs). The next sections discuss how managers can identify, promote, and facilitate various kinds of interactions within communities of practice. The techniques may be structured and formal or, as the following description of Rafael's practices illustrates, they may be semiformal, even fun.

Cake Meetings—Food for Thought for a Section of Knowledge Workers

Most of Rafael's knowledge workers are grouped in units called *sections*, that are both a natural and formal CoP. A typical section, which is a part of the formal organizational structure, consists of about 20 to 40 workers who either share the same professional specialization (such as a section of mechanical engineers and technicians) or belong to the same project. They are usually located in the same geographical area. Such a group is a perfect example of a CoP that would benefit from enhanced interactions.

The section leader is expected to be a professional leader with managerial skills. In addition to his many duties he is supposed to nurture the important interactions within his group. Fortunately, almost all of Rafael's sections have a semi-formal method of interaction called "cake meetings":

Cake Meetings

The weekly sectional cake meetings are based on a long-standing tradition. The origin of the meetings was primarily social: a weekly 60-minute get-together, with rotating responsibility for the refreshments (usually cake, except for the "watermelon meetings" in the hot summer months). Although a social meeting has merit in itself, with time the cake meetings evolved as good section leaders tried to make better use of the time.

Today, beyond announcements and company gossip, cake meetings incorporate descriptions of work in progress, professional lectures, discussions of work methodology, analyses of failures and successes, and other content that is relevant to the section's work. The meetings are long, sometimes more than an hour, but their contribution to the work of the team is substantial. People generally like to participate. They are eager to give presentations, listen to and learn from others, and compete for the "best cake baker" title.

Tuvya has found that these cake meetings are essential for the success of a section. Sections without cake meetings usually have some problems (although, unfortunately, the opposite is not true—just having cake meetings is not enough to guarantee success). The cake meetings evolved naturally into a tradition and were not the result of theory-based interventions. But we know that the reason they work as interactions of knowledge creation and sharing is that they contain the cultural and physical components that promote successful CoPs.

The lesson for managers is that, whether you call them cake meetings, watermelon meetings, happy hour, or any other name, you need to establish a forum for regular meetings with open channels of communication and meaningful work-related content. The needs of the group, organizational culture, and nature of the work will determine the appropriate format of the meetings. The important goal of the format is to simultaneously enable people to talk comfortably and informally while consistently incorporating relevant work-related content.

Cakeless Meetings for Managers

Going up the organizational level, most managers in every organization also participate in a more formal weekly meeting. We do not know how they are called in your organization, but they are usually referred to as a management meeting, staff meeting, or the like. The format may vary, but it usually consists of a subject or two presented for discussion and/or approval, and reporting on current issues or events. Hence the meetings usually have some elements of knowledge sharing and dissemination.

The importance, effectiveness, and attraction of these meeting vary widely. A typical middle manager usually participates in two such meetings: one that he holds for his subordinates and one managed by his superior. (You may guess which meeting he thinks is indispensable and which he complains is a waste of time . . .)

Looking at these meetings from the point of view of CoPs, we may suggest a way to make them more effective. We realize that the participants actually constitute a formal and natural CoP: a team of managers of a specific unit in the organization, or even the general management. We do not recommend turning these meetings into cake meetings: The social purpose is smaller (though it exists) and we also need to keep calorie consumption down. However, we do recommend turning them into knowledge-creating interactions both in style and in content.

Regarding style, there are many techniques to improve the knowledge-creating interactions, some are described elsewhere in this chapter. The common factor is that the chairperson of the meeting should expect and extract members' contributions, and respect different or opposing opinions. A resolution that has been invented by the group is much more likely to be supported than a resolution dictated by the manager, and will usually be on par with or better than the manager's resolution.

Regarding content, we suggest that a large part of these meetings will be dedicated to long-term issues of building intellectual capital. The current and urgent day-to-day issues always require attention. Nevertheless, management must dedicate time to plan and implement the long-term goals in strategy, human resources, customers, processes, and R&D. (All the issues that the Navigator, described in Chapter 2, should mention to us.)

Identifying and Enhancing CoPs

This section describes lessons learned in various organizations about identifying, managing, and enhancing CoPs, while avoiding common problems associated with them.

Can CoPs be Managed? Lessons Learned at National Semiconductor

National Semiconductor (NSC) is an electronics corporation with headquarters in Santa Clara, California. In the late 1990s, motivated by various knowledge-related problems, its top management decided to invest in knowledge management and initiated many activities to enhance CoPs. The following example illustrates how Peter Himes, then director of technology programs in NSC (leader of KM initiatives), described the experience.[5]

NSC discovered that it had several self-organized groups of engineers, from different business units, who had been informally swapping ideas for more than 20 years. Uncovering their contribution made NSC extremely enthusiastic about the idea of CoPs.

They began identifying and promoting other informal CoPs in the organization. They wanted to grant people access to professional experts across the structural boundaries of the organization. The CoPs were encouraged to meet and the practice was touted around the company. At some point they had about 25 such groups.

Unfortunately—although off to a good start—the experiment ultimately failed. Most CoPs endured for a few meetings or a few months and then disbanded. Eventually, only three or four CoPs survived, mostly those that existed before the management initiative.

What happened? Some organizational researchers cite this experiment as proof that CoPs cannot be shaped by management. They must self-organize. But that's a dead-end conclusion—we want to learn from this experiment about what management can do.

Peter Himes had a different explanation. He claimed that the main reason for the failure was that the yield of the meetings was not high enough. It turns out that people were not convinced that they would benefit from contributing to the meetings or that they would gain new knowledge, so it was not worth it for them to invest even the relatively small time needed to participate. Their own assignments gained priority, and the meetings fizzled out. He thinks a similar factor determined the success (or failure) of a series of lectures (see Chapter 7) conducted at that period: Is the added value high enough?

The experience of NSC teaches us several lessons. First, managers must identify existing CoPs, which have added value for both their members and the organization, and help them strive naturally. One of the CoPs that continued to exist in NSC was an informal group of electrical engineers from various departments that meets regularly to discuss problems of electrostatic discharge (ESD). ESD issues affect many electronic designs, which make the group meetings attractive for many engineers.

Second, if you artificially create a CoP which is not a part of the formal structure of the organization, you must ensure continuous added value and benefit to the participants (and their managers and the organization).

Another course of action is to enhance the work of formal groups that are already part of the organizational structure. They often contain characteristics of CoPs, and their interactions can be fostered in the direction of knowledge creation and sharing.

Perhaps the most important lesson, however, is that managers need to make sure that the interactions have meaningful content, thereby providing added value for their members as well as the organization. Interaction forums compete with other demands on workers' time; workers will be motivated to participate only if they see a clear connection between participation and various desired outcomes. In other words, they need incentives to participate, and one major incentive is professional added value. Meetings in which relevant knowledge is not shared and created will be less attractive to participants. Thus, fostering these meetings requires careful consideration of how to promote meaningful content.

Preventing Common Problems with CoPs

Understanding the CoPs model can help managers avoid unnecessary problems when reorganizing the company. Especially, we should be careful not to break existing CoPs. Juanita Brown, a consultant from northern California, shared with us the following chilling story.[6]

A Reengineering That Cuts CoPs

Many companies decided, during the reengineering trend in the early 1990s, that they could dispose of middle management. This was supposed to save them money and flatten the organization structure along the way. Sometimes it worked. But in many cases, companies learned that middle managers held much of the knowledge of the organization, were the core of many CoPs, and served as the brokers of knowledge between CoPs. In these cases, the companies lost more than they gained.

The most dramatic story is about a reorganization in a certain multibillion-dollar global corporation. During a management brainstorming session that Ms. Brown facilitated, the management team realized that in their recent reorganization they had cut almost every formal and informal network! While not immediately affecting financial results, they suffered lots of friction and tension, some slowdown, and definitely less innovation for several months.

Another compelling story regards the restructuring of the Israel Aircraft Industries (IAI). Their KM team describes the experience:[7]

IAI Restructuring and Rebuilding of CoPs

IAI underwent a usual restructuring, aimed at achieving better results through decentralizing the company of 10,000-plus employees into

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sixteen profit centers. Each sub-company was run independently, and was independently accountable for its financial performance. Some benefits were gained, but also brought forth some problems: the sub-companies often found themselves competing for customers, and the structure inhibited knowledge sharing.

Later, they have moved away from this culture. They are promoting a "one-company" value throughout IAI in order to establish communities of practice that benefit from knowledge sharing. They are attempting to undo the damage of breaking apart existing communities of practice in a new reorganization.

Whether the reorganization is a well-planned step resulting from a thorough analysis of how to improve efficiency and productivity in response to a changing environment, or a response to a managerial trend, management must take care to preserve the existing formal and informal communities of practice.

Indispensable Knowledge-Creating and Knowledge-Sharing Interactions

While promoting the concept of interactions and CoPs, we intentionally did not elaborate on their content, trusting the CoP to define it for itself. However, there are various kinds of special purpose meetings that every knowledge organization must hold. Some examples of such indispensable interactions are described next.

After-Action Review

An important type of knowledge interaction is the after-action review: a professional discussion that analyzes performance with a focus on learning from both successful and unsuccessful aspects. The main focus of the discussion is identifying the gaps between desired and actual performance and drawing conclusions for the next time. The practice has been used by the military for years as a tool for learning from each experience and preventing future mistakes.

In order to be successful, the analysis should be detailed and characterized by openness. Total honesty is a must for after-action reviews to work, but it is not always easily attained. In a proper after-action review, a junior organizational member (in the case of the army, a junior officer; in organizations it may be a recent graduate with limited practical experience) should feel free to criticize more senior colleagues. Inhibitions damage the knowledge gains that result from the process. Thus the climate should focus on giving and receiving feedback rather than evaluation.

It is important that after-action reviews do not become interrogations or investigations. The last thing that promotes openness and candid exchange of lessons learned is a search for someone to blame. People who are preoccupied with defending their decisions and appearing blameless will not contribute to a fruitful analysis of what really went wrong. Only when people feel safe will they volunteer input that may compromise their image.

After-action reviews are an example of a knowledge interaction that goes beyond what the individual can learn alone or in a course. How can you implement the method in your team? Pick a unit of time or performance and institute a periodic review. The review can be of day-to-day tasks at the end of the day, at the end of the week, or at the end of the month. It can follow large projects as well as smaller milestones along the way.

Many claim that reviews should be conducted in groups that include only those people who were involved in the activity itself. It helps the participants feel that they can be totally honest and, more importantly, be committed to the corrective action or corrective action required. Others claim that an outsider, especially if more experienced than the group, is necessary for a better perspective or to make out-of-the-box proposals. In any case, it is important to keep the proper climate in order to minimize status differences and encourage open and honest feedback.

The results of the review should be disseminated to a predetermined target audience in an attractive and user-friendly document. The dissemination of the document constitutes successful lesson learning. The goal of the after-action review is to improve future performance, and this goal is attained if the lessons learned are internalized by those who might repeat the mistakes of their predecessors (or who are supposed to make similar successes). An example of a successful method of dissemination follows.

Failure of the Month

When you conduct after-action reviews, you study what you did and investigate how to do it better next time. One of Rafael's production departments used to publish a "Failure of the Month" newsletter, describing a noteworthy design or production problem and analyzing how to deal with it and/or prevent it. The idea was that if you told everyone about the mistake, they would not repeat it.

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