The concept of "ba": Building a foundation for knowledge creation
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The Concept of "*Ba*": Building a Foundation for Knowledge Creation

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The management of knowledge has become a frequently discussed topic in the management literature. What are the fundamental conditions for knowledge creation? Where is knowledge creation located? Is it possible to actually manage knowledge like other resources? To address these questions we introduce the Japanese concept of "*ba*," which roughly translates into the English word "place."

The concept of *ba* was originally proposed by the Japanese philosopher Kitaro Nishida and was further developed by Shimizu.[1] Although our concept of *ba* draws extensively from these works, we have adapted it for the purpose of elaborating our model of knowledge creation. For those unfamiliar with the concept, *ba* can be thought of as a shared space for emerging relationships. This space can be physical (e.g., office, dispersed business space), virtual (e.g., e-mail, teleconference), mental (e.g., shared experiences, ideas, ideals), or any combination of them. What differentiates *ba* from ordinary human interaction is the concept of knowledge creation. *Ba* provides a platform for advancing individual and/or collective knowledge. It is from such a platform that a transcendental perspective integrates all information needed. *Ba* may also be thought of as the recognition of the self in all. According to the theory of existentialism, *ba* is a context which harbors meaning. Thus, we consider *ba* to be a shared space that serves as a foundation for knowledge creation.

Knowledge is embedded in *ba* (in these shared spaces), where it is then acquired through one's own experience or reflections on the experiences of

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others. If knowledge is separated from *ba*, it turns into information, which can then be communicated independently from *ba*. Information resides in media and networks. It is tangible. In contrast, knowledge resides in *ba*. It is intangible.

We ground the concept of *ba* in an existentialist framework. The key platform of knowledge creation is the "phenomenal" place. Such a place of knowledge can emerge in individuals, working groups, project teams, informal circles, temporary meetings, e-mail groups, and at the front-line contact with the customer. The four most common types of *ba* are described below.

Within an organization, knowledge-creating teams or projects play key roles in value creation. Value creation in knowledge-creating companies emerges from interactions within shared *ba* but is not restricted to the physical *ba*. The concept of *ba* unifies the physical space, the virtual space, and the mental spaces. *Ba* is the world where the individual realizes himself as part of the environment on which his life depends.

Ba exists at many levels and these levels may be connected to form a greater *ba* (known as a *basho*). The self is embraced by the collective when an individual enters the *ba* of teams. Just as the *ba* for individuals is the team, the organization in turn is the *ba* for the teams. Finally, the market environment is the *ba* for the organization. *Ba* is of fundamental importance for knowledge creation, and this creative process is amplified when all these *ba* conjoin to form a *basho*.

To participate in a *ba* means to get involved and transcend one's own limited perspective or boundary. This exploration is necessary in order to profit from the "magic synthesis" of rationality and intuition that produces creativity.[2] Within an organization, then, one can both experience transcendence in *ba* and yet remain analytically rational, achieving the best of both worlds.

Ba is also conceived as the frame (made up of the borders of space and time) in which knowledge is activated as a resource for creation. The use of knowledge is different from that of tangible resources. When using tangible resources, it is necessary to distribute efficiently according to functions and goals. Knowledge, however, is intangible, boundaryless, and dynamic, and if it is not used at a specific time in a specific place, it is of no value. Therefore, the use of knowledge requires the concentration of the knowledge resources at a certain space and time (organic concentration). For example, the sharing of knowledge organizationally means that the staff is able to apply and develop the necessary inherent knowledge. Also, when knowledge is created, the personnel possessing knowledge and the knowledge base of a company are focused at a defined space and time.

Ba is the platform for the "resource concentration" of the organization's knowledge assets and the intellectualizing capabilities within the knowledge-creation processes. *Ba* collects the applied knowledge of the area and integrates it. Thus, *ba* can be thought of as being built from a foundation of knowledge.

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Knowledge Creation as Self-Transcendental Process

Explicit and Tacit Knowledge

There are two kinds of knowledge: explicit knowledge and tacit knowledge. Explicit knowledge can be expressed in words and numbers and shared in the form of data, scientific formulae, specifications, manuals, and the like. This kind of knowledge can be readily transmitted between individuals formally and systematically. In the West, in general, this form of knowledge has been emphasized. Many Japanese, however, view knowledge as being primarily tacit, something not easily visible and expressible. Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or share with others. Subjective insights, intuitions, and hunches fall into this category of knowledge. Tacit knowledge is deeply rooted in an individual's actions and experience as well as in the ideals, values, or emotions he or she embraces.

There are two dimensions to tacit knowledge. The first is the technical dimension, which encompasses the kind of informal personal skills or crafts often referred to as "know-how." The second is the cognitive dimension. It consists of beliefs, ideals, values, schemata, and mental models which are deeply ingrained in us and which we often take for granted. While difficult to articulate, this cognitive dimension of tacit knowledge shapes the way we perceive the world.

The SECI Model

Knowledge creation is a spiraling process of interactions between explicit and tacit knowledge.[3] The interactions between these kinds of knowledge lead to the creation of new knowledge. The combination of the two categories makes it possible to conceptualize four conversion patterns. Figure 1 shows the characteristics of the four steps in the knowledge conversion process. Each of the four conversion modes can be understood as processes of self-transcendence. The SECI model serves only as an outline for knowledge creation and the idea of self-transcendence is quite abstract. However, it can be put into practice.

Socialization

Socialization involves the sharing of tacit knowledge between individuals. Here, Nishida's concept of "pure experience," which is related to Zen learning, is important.[4] We use the term socialization to emphasize that tacit knowledge is exchanged through joint activities—such as being together, spending time, living in the same environment—rather than through written or verbal instructions. Long years of apprenticeship allow newcomers to understand others' ways of thinking and feeling. Thus in a certain sense, tacit knowledge can only be shared if the self is freed to become a larger self that includes the tacit knowledge of the other. For example, the larger self means that we empathize with our colleagues and customers, rather than sympathizing with them. In short, self-transcendence is fundamental to sharing individual tacit knowledge.

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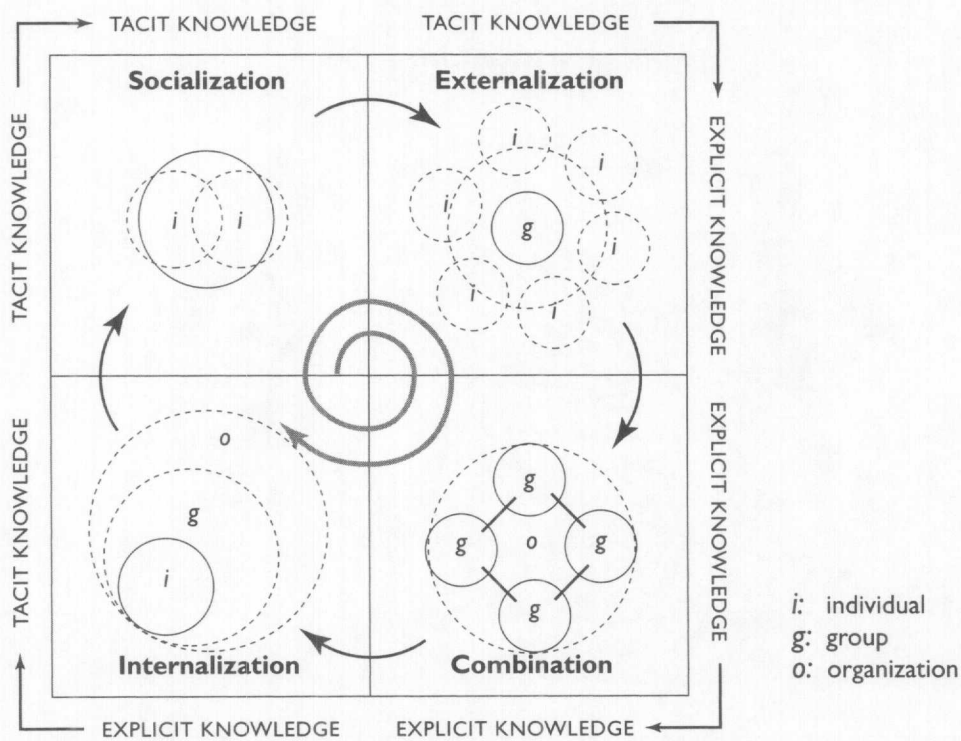
FIGURE 1. Spiral Evolution of Knowledge Conversion and Self-transcending Process



In practice, socialization involves capturing knowledge through physical proximity. The process of acquiring knowledge is largely supported through direct interaction with suppliers and customers. Capturing tacit knowledge by walking around inside the company is another process of acquiring knowledge. Information is accessed at the actual job site within the company and the latest available information is collected. Disseminating tacit knowledge is another key aspect of socialization. The process of transferring one's ideas or images directly to colleagues or subordinates means to share personal knowledge and create a common place—or *ba*. (See Figure 2.)

Externalization

Externalization requires the expression of tacit knowledge and its translation into comprehensible forms that can be understood by others. In philosophical terms, the individual transcends the inner- and outer-boundaries of the self. During the externalization stage of the knowledge-creation process, an individual commits to the group and thus becomes one with the group. The sum of the individuals' intentions and ideas fuse and become integrated with the group's

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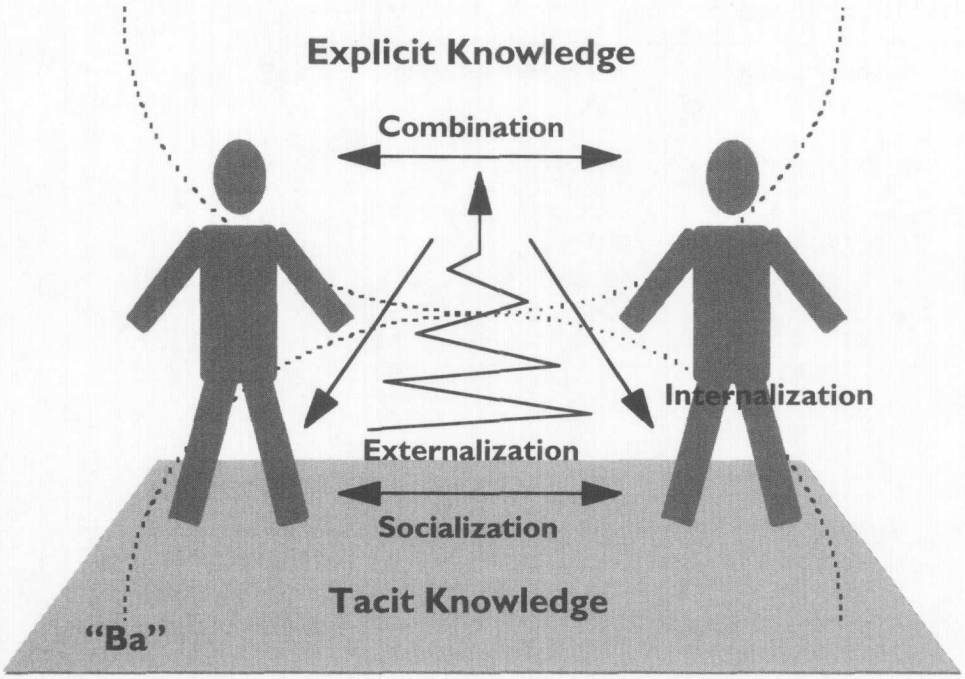
FIGURE 2. *Ba* and Knowledge Conversion



mental world. Thus, self-transcendence is a key to group integration and conversion of tacit knowledge into explicit knowledge.

In practice, externalization is supported by two key factors. First, the articulation of tacit knowledge—that is, the conversion of tacit into explicit knowledge—involves techniques that help to express one's ideas or images as words, concepts, figurative language (such as metaphors, analogies, or narratives), and visuals. Dialogue, "listening and contributing to the benefit of all participants,"[5] strongly supports externalization. The second factor involves translating the tacit knowledge of customers or experts into readily understandable forms. This may require deductive/inductive reasoning or creative inference (abduction). An important practice within the SECI model is the translation of the highly personal or highly professional knowledge of customers or specialists into explicit forms that are easy to understand.

Combination

Combination involves the conversion of explicit knowledge into more complex sets of explicit knowledge. In this stage, the key issues are communication and diffusion processes and the systemization of knowledge. Here, new

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knowledge generated in the externalization stage transcends the group in analogue or digital signals.

In practice, the combination phase relies on three processes. Capturing and integrating new explicit knowledge is essential. This might involve collecting externalized knowledge (e.g., public data) from inside or outside the company and then combining such data. Second, the dissemination of explicit knowledge is based on the process of transferring this form of knowledge directly by using presentations or meetings. Here, new knowledge is spread among the organizational members. Third, the editing or processing of explicit knowledge makes it more usable (e.g., documents such as plans, reports, market data). In the combination process, justification—the basis for agreement—takes place and allows the organization to take practical concrete steps.

Internalization

Finally, the internalization of newly created knowledge is the conversion of explicit knowledge into the organization's tacit knowledge. This requires the individual to identify the knowledge relevant for one's self within the organizational knowledge. That again requires finding one's self in a larger entity. Learning-by-doing, training, and exercises allow the individual to access the knowledge realm of the group and the entire organization.

In practice, internalization relies on two dimensions. First, explicit knowledge has to be embodied in action and practice. Thus the process of internalizing explicit knowledge actualizes concepts or methods about strategy, tactics, innovation, or improvement. For example, training programs in larger organizations help the trainees to understand the organization and themselves in the whole. Second, there is a process of embodying the explicit knowledge by using simulations or experiments to trigger learning by doing processes. New concepts or methods can thus be learned in virtual situations.

In summary, the SECI model describes a dynamic process in which explicit and tacit knowledge are exchanged and transformed. The four modes of knowledge creation allow us to conceptualize the actualization of knowledge within social institutions through a series of self-transcendental processes. *Ba* offers an integrating conceptual metaphor for the SECI model of dynamic knowledge conversions. Within *ba*, real-time knowledge creation is achieved through self-transcendence.[6]

Knowledge Creation and the Characteristics of the Four Types of *Ba*

There are four types of *ba* that correspond to the four stages of the SECI model. Each category describes a *ba* especially suited to each of the four knowledge conversion modes. These *ba* offer platforms for specific steps in the knowl-

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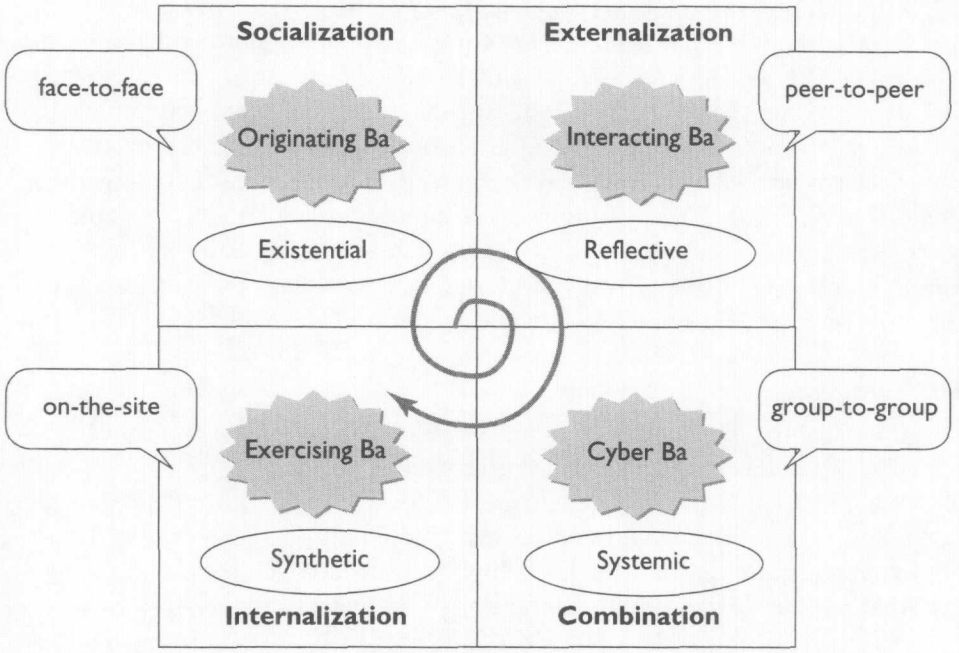
FIGURE 3. The Four Characteristics of *Ba*



edge spiral process. The combinations of processes are shown in Figure 3. Each *ba* supports a particular conversion process and thereby each *ba* speeds up the process of knowledge creation.

Originating ba is the world where individuals share feelings, emotions, experiences, and mental models. An individual sympathizes or further empathizes with others, removing the barrier between the self and others. Here emerges what Condon terms "entrainment" (synchronizing behavior)[7] and improvisation. Using epistemological metaphors, Nishida's "I love therefore I am" stands in contrast to Descartes's "I think therefore I am." From originating *ba* emerge care, love, trust, and commitment.

Originating *ba* is the primary *ba* from which the knowledge-creation process begins and represents the socialization phase. Physical, face-to-face experiences are the key to conversion and transfer of tacit knowledge. Pure experiences, ecstasy, or "being thrown into the world" (Heidegger) are philosophical terms to describe this. Organizational issues that are closely related to originating *ba* are knowledge vision and culture. A stress on open organizational designs and customer interfaces also provides strong ecological stimuli through direct encounter between individuals.

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The *interacting ba* is more consciously constructed, as compared to originating *ba*. Selecting people with the right mix of specific knowledge and capabilities for a project team, taskforce, or cross-functional team is critical. Through dialogue, individual's mental models and skills are converted into common terms and concepts. Two processes operate in concert: individuals share the mental model of others, but also reflect and analyze their own. This is the *ba* where Nishida's world and the Cartesian world interact in thought.

Interacting *ba* is the place where tacit knowledge is made explicit, thus it represents the externalization process. Dialogue is key for such conversions; and the extensive use of metaphors is one of the conversion skills required. The importance of sensitivity for meaning and the will to make tacit knowledge explicit is recognized at companies like Honda or 3M. Here, interacting *ba* for collective reflection are institutionalized in the company culture. Initiators (conceptual leaders) are challenged to pursue their ideas. "Thou shall not kill a new product idea" is a rule at 3M that provides an organizational-level, interacting *ba* for dialogue where people engage jointly in the creation of meaning and value.

Cyber ba is a place of interaction in a virtual world instead of real space and time; and it represents the combination phase. Here, the combining of new explicit knowledge with existing information and knowledge generates and systematizes explicit knowledge throughout the organization. Cartesian logic dominates. The combination of explicit knowledge is most efficiently supported in collaborative environments utilizing information technology. The use of on-line networks, group-ware, documentations, and database has been growing rapidly over the last decade, enhancing this conversion process.

Exercising ba supports the internalization phase. Exercising *ba* facilitate the conversion of explicit knowledge to tacit knowledge. Focused training with senior mentors and colleagues consists primarily of continued exercises that stress certain patterns and working out of such patterns. Rather than teaching based on analysis, learning by continuous self-refinement through OJT or peripheral and active participation[8] is stressed. Thus the internalization of knowledge is continuously enhanced by the use of formal knowledge (explicit) in real life or simulated applications. Exercising *ba* synthesizes Nishida's world and the Cartesian world through action, while interacting *ba* achieves this through thought.

Awareness of the different characteristics of *ba* can facilitate successful support of knowledge creation. Eventually, the knowledge generated within each *ba* is shared and forms the knowledge base of organizations. However,the organization's *ba* is not just the accumulation of different materials or information, rather it possess the dynamism to continually create new knowledge through a cycle of converting tacit knowledge into explicit knowledge and then reconverting it into tacit knowledge.

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Constructing *Ba*: Cases in the Transformation of *Ba*

How do companies create *ba* and assure the continuous transformation of *ba* within the organization?

Ba can be generated by organizational effort. What kind of knowledge is concentrated in it depends on the situation and strategy of a company. *Ba* has an important role in organizational design, which the following three company examples illustrate. While the first two companies have continued to uphold their former organizational structure, they are examples of the creation of *ba* to promote the organic concentration of knowledge and knowledge creation. The third company was originally designed with the purpose of organic concentration.

- Sharp created *ba* for organic concentration outside of the existing business organization. The organization accumulates a customer knowledge base by customer research, and it then uses project teams to develop proposals, create new concepts, and engage in high-speed product development.
- Toshiba established an internal agent with the function of achieving organic concentration within the existing organization.
- Maekawa Seisakusho has been built with organic concentration of resources geared to market niches. The entire organization was designed with the metaphor "organism" in mind.

Sharp—Project Teams as Ba *for Knowledge Creation*

Sharp has a unique project system that provides flexibility for dynamic resource development (see Figure 4). "Urgent Projects" are strategic development projects involving technologies or products that have an impact on the entire company. Under this system, projects are pursued and developed independently from the hierarchical R&D structure. The members of the Urgent Project Team are selected by the team leader to meet project requirements and represent the organization. Each urgent project has to be completed within 18 months. To achieve high-quality developments in such a short time span, the teams have the full financial support of headquarters. The middle managers heading the Urgent Project Teams receive top priority for resource access throughout the entire company. In practice, this means that divisions might lose their most capable members for over a year to the Urgent Project Teams.

At Sharp, the proposals for Urgent Project Teams can be made by each division. However, each project has to justify its demand for fast mobilization of core technologies (knowledge) across different divisions. Each proposal is reviewed and approved at the General Technological Conference, the highest R&D decision-making body of the firm. This system has had much success as many hit products owe their success to the Urgent Project system. Examples are: the "Zaurus" (or "LC Pen Com"), which uses a liquid crystal display and a pen

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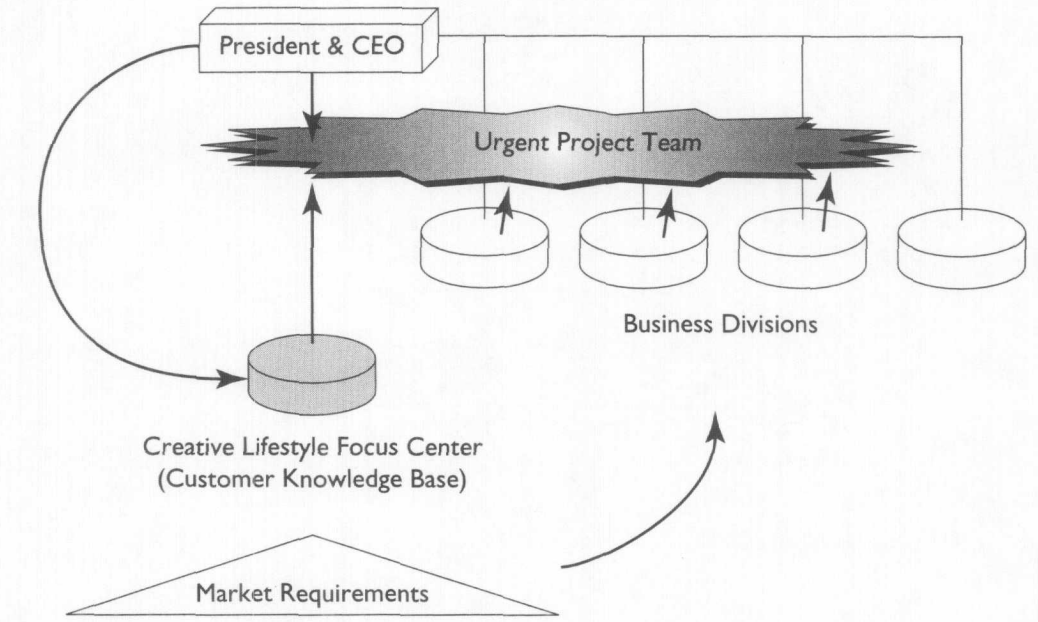
FIGURE 4. SHARP—Boundary-Spanning Team



as input device; and the "View-Cam" video camcorder, which uses an LCD as a viewfinder.

The company has also created a unit that transcends the levels and boundaries of its knowledge among the Business Groups and Divisions and that coordinates product lines from the users' perspective. The Creative Lifestyle Focus Center has developed various systems to create new product concepts based on consumers' needs, wants, or values. The first is the "Trend Leader System," which started in 1985. This system organizes about 600 "leading consumers," ranging from middle-school students to senior citizens in their seventies, as the Center's outside staff. The 600 people are divided into numerous clusters such as students, married working women, and retired senior citizens. When a product concept is created, it is reviewed by these "leading consumers." Through intensive face-to-face interaction with these focus groups, the Center collects a large amount of high-quality tacit as well as explicit knowledge, from which it predicts consumer trends with time frames ranging from one to ten years.

Toshiba—Organizational Structure Supports Self-Referential Ba

The case of Toshiba illustrates how *ba* as a platform for knowledge creation can be designed as a division (or more precisely, a group of divisions) with

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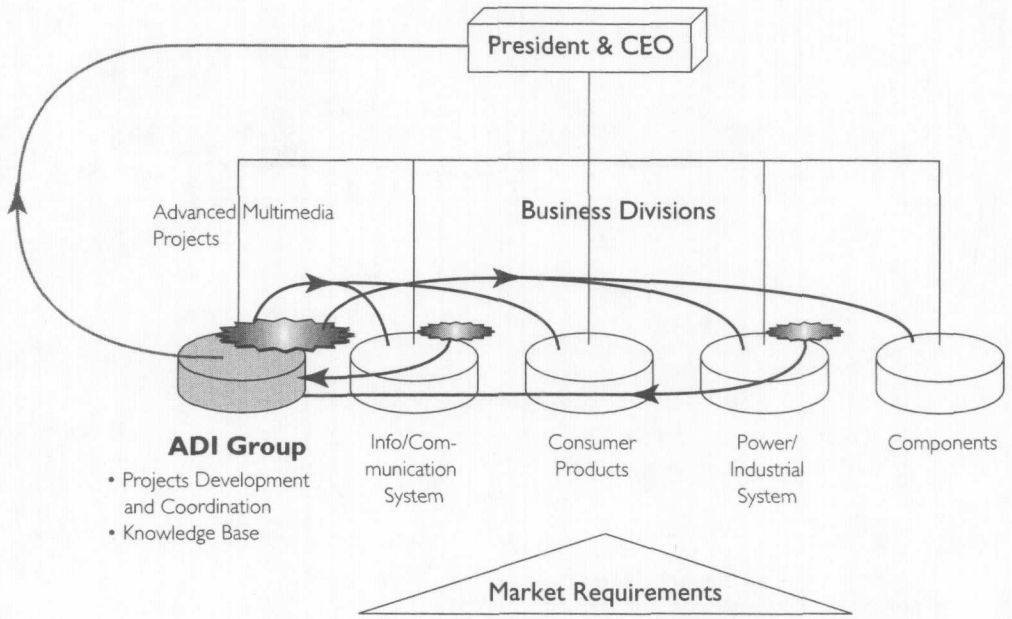
FIGURE 5. TOSHIBA— Boundary-Spanning Division



an organizational structure. Toshiba's vision of ADI (Advanced I Strategy) has recently been embraced by the new president, who foresees Toshiba's evolution into an "agile company." The mission of this business group is to effectively transfer Toshiba's core technologies (knowledge) to new businesses as well as reintroduce innovation, challenge, and speed into Toshiba's management structure. The task of the ADI business group is to provide new markets and new business opportunities for Toshiba in the interactive multimedia field. To accomplish this task, resources are concentrated in the emerging *ba* of business. The knowledge of all the divisions is combined in a flexible way, transcending the divided resources of Toshiba's traditional hierarchical business system. The ADI group thus represents a kind of "super or transcendent division." (See Figure 5.)

The ADI group is responsible for providing a climate in which the dispersed knowledge assets come together to be crystallized in new products and businesses. The ADI Business Domain of existing knowledge is described by a matrix of 9 places within which various new markets have already emerged. Examples include wireless communication infrastructure, DVD, digital broadcasting, interactive TV, and internet appliances.

The "key strategies" of ADI for the development of knowledge are:

- to intensify the sense of speed and agility,
- to change the fiscal period mind set,

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- to create a boundaryless operation-partnership, and
- to invest to get an early foothold in emerging markets.

These strategies are supported by Toshiba's organizational structure. Positioned immediately below the chairman, president, and CEO, the ADI group is at the same high level in the organizational pyramid as other business groups, such as the consumer products group and the power/industrial systems group. Moreover, the ADI group is flat and flexibly structured. All members are interactively connected via the intranet. To further improve the information flow and to reinforce and speed up the decision-making process, there is a system of periodic meetings. For example, every second week a management committee meets with key technology managers jointly appointed with ADI managers from the other divisions. These key technology managers possess the knowledge on core technologies and skills within their divisions. Thus, the ADI activities are boundary-spanning, independent activities within the existing organization.

This kind of independence needs a solid foundation. First, it needs support from top management. Second, the funding has to be ample enough to support challenging projects. Toshiba found a solution for the funding problem. The ADI group is financed by 0.5% of each of the business unit sales or a total of 30 billion Yen. The pioneer role played by ADI guarantees a position on a special hierarchical level.

Maekawa—The Corporate Group as a Platform for Knowledge Creation

Maekawa Seisakusho, the leading company in industrial freezers, was founded in 1924 and has since then focused on specialized know-how in basic, applied, and production technologies in industries that involve food and thermal technology. Maekawa Seisakusho now manufactures a broad variety of industrial freezers. Maekawa's brand name "MYCOM" is well-known and accounts for 90% of all industrial freezers exported from Japan. Maekawa Seisakusho holds a 50% world market share in industrial freezers.

The unique management system at Maekawa is characterized by a group of "independent corporations." Each of these small corporations is established and classified by product, core technology and market type and must be self-supporting. Each independent company on average has 25 employees. The Maekawa group now has 80 such corporations in Japan and 23 in foreign countries, with approximately 2500 total employees. Each of the independent companies has the wider consciousness of itself as being a main constituent in a group that exists only as a collective entity. (See Figure 6.)

The group consists of 58 locally independent companies that serve customers of each region and 20 companies in the Tokyo area that focus on specific user categories of business customers (e.g., food, industrial freezers, or energy-related services). Each employee covers several functional domains (such as design, manufacturing, sales, services, and accounting). This makes Maekawa

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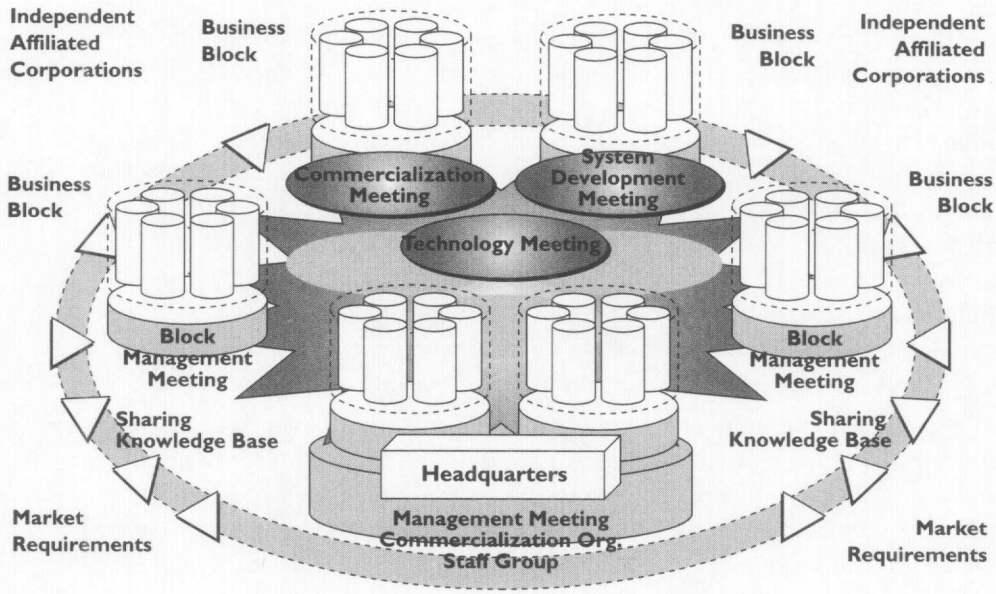
FIGURE 6. MAEKAWA Group—Organic Market Boundary Penetration



employees specialized generalists who thus have a wider consciousness of self within the local organization and within the whole. This understanding of self within the totality of the *ba* constitutes the foundation of Maekawa Seisakusho's culture.

This empowerment of autonomous local organizations is meant to create a greater ability to cater to customer needs. A closeness to customers is the fundamental concept for the entire firm. Each of the independent companies has to pursue its own *ba*, its own raison d'être.

The concept of *ba* thus permeates Maekawa Seisakusho, for the individual, the teams, the individual companies, and the entire group. The term *ba* at Maekawa Seisakujo means the arenas where the group can grow and innovate, such as business domains or markets that might be helped with Maekawa Seisakujo's values. The president of Maekawa Seisakusho, Masao Maekawa describes "getting out in the real world" as a way of "gapless co-experiencing" with customers. He points out that it is vital "to indwell in the world of the customers, to achieve oneness of subject and object; this helps to understand the needs of customers." In short, *ba* jointly possessed by the customers should not be dominated by the company's ideas. Rather, they should be "fields of nothingness" with no filters or articulated meanings. Maekawa Seisakusho's emphasis on *ba* is closely related to its emphasis on tacit knowledge and knowledge creation.

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Summary

The three strategies used by these companies to create the *ba* necessary for knowledge creation are rather different. Sharp employs teams as *ba* to support knowledge creation. Toshiba institutionalizes a platform for cross-functional knowledge creation with its ADI division. Maekawa Seisakusho grounds the company culture, the organizational structure and success in the *ba* for knowledge creation. However, while organizationally different, all three are consistent with the theory of knowledge creation in their emphasis on the *ba* as the source of this creation process. The dynamics of ba are a function of the spatial design. This is where management intervenes in the process of knowledge creation.

Implications

Ba: Organic Ground for Knowledge Creation

The organic concentration of knowledge assets in *ba* involves not a consumption process of resources, but an ecological process with a cyclical cultivation of resources. For example, the PDCA cycle is a linear process through which resources are either consumed or meaninglessly distributed. However, knowledge creation and application represent ecology, not economy, and *ba* is the stage for this resource cycle.

In complexity theory, the feedback that occurs in a system produces increasing returns in economics or manufacturing within companies. This is a concept that adequately explains the growth mechanism of companies in the high-tech and service industry. However, it is actually the knowledge possessed by a company or organization, which cultivates the feedback from the market, and which in time fosters even higher growth. To examine this mechanism from the perspective of knowledge creation, this is the spiral of knowledge conversion, the expansion of a chain of organizational *ba*.

Management for Knowledge Creation: Beyond Management of Knowledge

Knowledge is manageable only insofar as leaders embrace and foster the dynamism of knowledge creation. The role of top management is as the providers of *ba* for knowledge creation. Their task is to manage for knowledge *emergence*. Leaders must support emerging processes with visionary proposals (mind) and a personal commitment of time and power (body). The success of knowledge creation depends on management's assumption of responsibility, justification, financial backing, and caring.

The management of knowledge as a static stock disregards the essential dynamism of knowledge creation. Managing emergent knowledge in *ba* requires a different sort of leadership. Top management must come to the realization that knowledge needs to be nurtured, supported, enhanced, and cared for. Thinking in terms of systems and ecologies[10] can help provide for the creation of platforms

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and cultures where knowledge can freely emerge. Knowledge "activists" support *ba* by committing themselves to ideas, experiments, and fellow human beings. In this sense, knowledge activists manage and live as catalysts of knowledge creation and connectors of present initiatives and foresight.[11] Along with their commitment, their visions on what knowledge to create and on how to support emerging *ba* are driving forces for all organizational members. This kind of knowledge leadership provides a definite space in time for body and mind to come together in an originating *ba*, where knowledge-creation processes emerge. This sets the agenda for a new kind of management.

Notes

1. K. Nishida, *An Inquiry into the Good*, translated by M. Abe and C. Ives (New Haven, CT: Yale University Press, 1990); K. Nishida, *Fundamental Problems of Philosophy: The World of Action and the Dialectical World* (Tokyo: Sophia University, 1970); H. Shimizu, "*Ba*-Principle: New Logic for the Real-Time Emergence of Information," *Holonics*, 5/1 (1995): 67-79.
2. S. Arieti, *Creativity: The Magic Synthesis* (New York, NY: Basic Books, 1976).
3. I. Nonaka, "A Dynamic Theory of Organizational Knowledge Creation," *Organization Science*, 5/1 (1994): 14-37; I. Nonaka, P. Byosiere and N. Konno, "Organizational Knowledge Creation Theory: A First Comprehensive Test," *International Business Review*, 3/4 (1994): 337-351; N. Konno and I. Nonaka, *Intellectualizing Capability*, in Japanese (Tokyo: Nippon Keizai Shimbunsha, 1995); I. Nonaka and H. Takeuchi, *The Knowledge Creating Company* (New York, NY: Oxford University Press, 1995).
4. Nishida (1970 and 1990), op. cit.
5. D. Bohm, *Wholeness and the Implicate Order* (New York, NY: Routledge, 1980).
6. Shimizu, op. cit.
7. W.S. Condon, "An Analysis of Behavioral Organization," *Sign Language Studies*, 13 (1976).
8. J. Lave and E. Wenger, *Situated Learning: Legitimate Peripheral Participation* (New York, NY: Cambridge University Press, 1991).
9. G. Von Krogh, K. Ichijo, and I. Nonaka, "Knowledge Enablers—Facilitate Organizational Relationships: On Care and Indwelling," JAIMS Conference, 1996.
10. J.S. Brown and P. Duguid, "Organizing Knowledge," *California Management Review*, 40/3 (Spring 1997).
11. Von Krogh et al., op. cit.

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