

The Practical Wisdom of Ikujiro Nonaka by Sally Helgesen

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**To help corporations create knowledge
more consciously, the author of
Managing Flow draws on Western
and Eastern philosophic traditions.**

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“In the act of creating, people argue. They have heated dialogue. They get upset! Without real exchange, you can’t create knowledge. Knowledge creation is a human activity.”

So says Tokyo-based business scholar Ikujiro Nonaka, coauthor (with management researchers Ryoko Toyama and Toru Hirata) of *Managing Flow: A Process Theory of the Knowledge-Based Firm* (Palgrave, 2008). This book explores how Japanese companies with consistently superior results develop innovative products and services by harnessing the power of knowledge creation. Nonaka and his coauthors draw examples from firms such as Toyota, Honda, Canon, Seven-Eleven Japan, the pharmaceutical company Eisai Company, Mayekawa Manufacturing, and the educational institute Kumon. They reveal the underlying dynamics for building knowledge in these companies — for example, Eisai’s practice of sending its researchers to work with the elderly in hospital wards so they can develop a stronger feel for the way patients use medications, leading to the development of better medicines.

In *Managing Flow*, Nonaka summarizes and extends a body of work that could change the prevailing view of knowledge management in most companies from a branch of information technology to an enabler of in-depth learning. At age 73, Nonaka has been developing this work for more than 40 years. In Japan, where he is professor emeritus at Hitotsubashi University in Tokyo, he is recognized as the nation’s most significant management scholar. He is also the president of the Japan–America Institute of Management Science (JAIMS) in Honolulu, a visiting scholar at the Helsinki School of Economics and at the University of California at Berkeley, and the Drucker Scholar in Residence (a

position named after the late management author Peter Drucker) at Claremont Graduate University in Los Angeles. To David Teece, director of the Institute of Management, Innovation, and Organization at Berkeley’s Haas School of Business, the figure most comparable to Nonaka was Drucker himself. “Both integrated knowledge from across many disciplines, and both had the early experience of conducting a lot of interviews in which they listened to real managers talking about real problems, which kept their theories grounded in the real world.”

Nonaka’s work first came to the attention of those within U.S. management circles in 1986 with an influential *Harvard Business Review* article titled “The New New Product Development Game,” coauthored with Hirotaka Takeuchi, who is now dean of the Graduate School of International Corporate Strategy at Hitotsubashi University and a visiting professor at Harvard Business School. That article, Nonaka’s first to explore organizational knowledge creation, was followed in 1991 with another Takeuchi-coauthored *HBR* article, “The Knowledge-Creating Company.” Their 1995 book, *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation* (Oxford University Press), laid out a comprehensive theory on developing collective intellectual capability.

“Jiro is quite simply the father of knowledge management,” says Takeuchi. “His research over the last 20 years opened up a whole new field and set the stage for how the best organizations understand human capital today.” Although Nonaka cites mostly Japanese companies in his research, says Takeuchi, “his model is universal. That’s why he’s the only Asian on the *Wall*

Street Journal's list [published in May 2008] of the 20 most influential business thinkers.”

The Flip Side of Knowledge

But Nonaka's perspective also runs counter to conventional corporate practice. Most companies assign knowledge management to their information technology departments, which focus on codifying best practices that can be captured, stored, indexed, and retrieved as efficiently as possible. Nonaka views all this data management as a minor, almost incidental aspect of the capability development that enables business success.

“Companies and leaders who treat knowledge management as just another branch of IT don't understand how human beings learn and create,” he says. Unlike land, capital, energy, labor, and technology — the conventional “inputs” into business practice — knowledge is innately self-renewing. “It is produced and consumed simultaneously. Its value *increases* with use, rather than being depleted as with industrial goods or commodities. Above all, it is a resource created by humans acting in relationship with one another.”

Thus, Nonaka's concept of a knowledge-creating company resembles the kind of community in which generosity is prevalent, people feel recognized as distinct individuals, and informal, honest communication is commonplace. When designers of knowledge management systems fail to understand this — when they (consciously or not) treat humans as interchangeable parts, receiving and processing data — their expensive, high-tech systems get ignored. This, in a nutshell, is why so many companies have invested hundreds of thousands of dollars in knowledge management systems that fail to deliver innovative results.

Given that a quick Google search of both “knowledge management” and “human capital management” yields almost exclusively references to IT, Nonaka's observations provide a useful corrective. As more and more companies recognize human capital as their primary resource, the concept of a knowledge-creating company becomes particularly relevant. Such a company cultivates tacit knowledge and deliberately harnesses it, often by making it explicit. Nonaka's concept of tacit knowledge was influenced by philosopher Michael Polanyi (who called it “tacit knowing”) and by Kitaro Nishida, the great Japanese scholar, who in the early 20th century tried to find common ground between Zen practice and Western philosophical thought. Tacit knowledge is a key component of innovation. It

includes the unspoken knowledge that people draw on from within themselves: observations, ingrained habits, inspirations, hunches, and other forms of awareness that are typically not written down or codified, but that live in people's minds and bodies, and give any organization much of its distinctive edge over competitors.

One evocative story from *The Knowledge-Creating Company* describes the product launch team at Canon Inc. as it struggled to devise an inexpensive, replaceable photocopier drum, which was an essential part of the company's strategy of besting the Xerox Corporation by producing an inexpensive copier for homes and small businesses. As things stood, copier drums required regular service by trained technicians; only large companies could afford that service. Team leader Hiroshi Tanaka brought in some beer, drained his can, and held it up. “How much does it cost to manufacture *this*?” he asked the group. His moment of insight, charged with tacit knowledge, inspired the team to come up with a process for building a low-cost disposable aluminum drum.

In *Managing Flow*, Nonaka and his coauthors describe a process by which any company can apply tacit knowledge. An example is Seven-Eleven Japan (SEJ). Nonaka points out that, although most analyses of the company (for example, a famous *HBR* case study) have focused on SEJ's highly developed point-of-sale information management systems, it is the quality of knowledge that makes the company so successful. Staff members in every store, even part-time clerks, are charged with making continual judgments about the value of merchandise to customers: “Is it moving? If not, why are customers rejecting it? And what are the opportunity costs of a customer who is disappointed?” By

drawing on the tacit insights of people on the front lines, SEJ gives its staff an incentive to build relationships with customers, whose behavior and comments provide vital knowledge to the company.

Nonaka notes that such processes flourish in organizations led by individuals who embody tacit and explicit knowledge in their own behavior. These “virtuous artisans,” as he calls them, have also been present in Western culture, dating back to Aristotle’s exploration of the idea of *phronesis* in his work *Nicomachean Ethics*. Often translated as “practical wisdom,” *phronesis* is the ethical yet pragmatic frame of mind held by those who can sense the essence of a situation and respond with creative and timely judgments. In *Managing Flow*, Nonaka quotes Soichiro Honda, founder of the company that bears his name, who once compared business judgment to making a good joke. “You have to grasp the atmosphere of the occasion,” Honda said, “which exists only for a particular moment. A joke is all in the timing, in understanding what the present evokes. To joke is to understand human emotion and be present for it.”

Inside the Petri Dish

In person, Nonaka-Sensei (as students and colleagues call him, using the Japanese honorific for *teacher*) is a small, quiet man, reticent but full of warmth, with an engaging and unexpectedly impish sense of humor that comes through despite his heavily accented English. He is passionate in debate and eager to engage in the kind of spontaneous and direct exchange that he advocates in his writing.

That enthusiasm came across in August 2008 in Oahu, Hawaii — at the JAIS facility on the eastern end of the island and in the lush gardens of Waikiki’s Halekulani Hotel — when Ikujiro Nonaka expanded upon the course of his work. After talking about a wide variety of subjects, Nonaka told his interviewer that they were creating *ba*, a Japanese term that describes a field or space where people freely and openly share what they know in the service of creating something new.

Ba resembles the concept of “flow” as set forth by psychologist Mihaly Csikszentmihalyi: It is the mental state that occurs when a person is fully immersed in whatever he or she is doing. But unlike flow, *ba* is never solitary; it exists among two or more people. As Nonaka says, “In *ba*, there is no you or me, there is only us, sharing a here-and-now relationship.” *Ba* can occur in a work group, a project team, an ad hoc meeting, a virtual e-mail list, or at the frontline point of contact with

customers. It serves as a petri dish in which shared insights are cultivated and grown.

Companies can foster *ba* by designing processes that encourage people to think together. For example, at the Toyota Motor Corporation, an exercise called the “five whys” enables employees to diagnose problems, as depicted this way in *Managing Flow*:

1. *Why is there [a problem with overstock]?*

Because we produced excess parts.

2. *Why did we do that?*

Because we were told to produce them.

3. *Why was this order given?*

Because we honor [only] the front end of the production cycle.

4. *Why do we do so?*

Because our production line is based on a push system, where the front end defines needs and sets goals.

5. *Why doesn’t the back end have input?*

Because it has no way to communicate its needs.

After this methodical drilling down reached that fifth *why*, division leaders understood the problem much better; they ultimately redesigned the production line to signal more effectively how much stock to pull from the front line. Most factories would have tried to solve the overstock problem by reprimanding the frontline individuals who produced excess parts, but Toyota, by persistently drawing forth the tacit knowledge of people involved, was able to identify the more fundamental kinks hidden in the system.

As Nonaka points out, “*Why* is ultimately a question of purpose: *Why do we exist?*” In most organizations, people are not encouraged to keep asking questions.” As a result, he says, people resign themselves to living with difficulties that they could actually resolve if they had “a way to frame their knowledge within a larger solution.”

Many leaders in the quality movement have noted the difficulty that Western companies have adopting *ba* in daily practice. (See, for example, “Jeffrey Liker: The Thought Leader Interview,” by Jeffrey Rothfeder, *s+b*, Summer 2008.) Nonaka believes that the problem is rooted in the scientific tradition that has prevailed in the West since the Enlightenment. Westerners generally esteem explicit or theoretical knowledge, which Aristotle called *episteme*, over tacit or embodied knowledge, which he called *techne*. *Episteme* can be delivered in a training session or absorbed intellectually: 10 steps for organizational change, four components of a balanced

Organizations that favor explicit over tacit knowledge may promote senior leaders who do not fully understand the subtleties of their enterprise.

scorecard, seven habits of highly effective people. *Techne*, by contrast, exists in subjective, or even subliminal, awareness. According to Nonaka, this type of knowledge cannot be completely codified, universalized, or measured scientifically because it is inseparable from the human beings who possess it. It must be communicated through informal apprenticeship or one-on-one guidance: *How do you do that? Here, let me show you.*

In many companies, people automatically assume that explicit knowledge is more reliable and accurate — a way of thinking that dates back at least to the era of scientific management. When an executive says, “Cut to the chase, just give me the numbers,” he or she is declaring his allegiance to *episteme* by attempting to exclude information that arrives through subjective means.

But organizations that favor explicit over tacit knowledge limit their capabilities in several ways. They define competence as the ability to rank high in metrics rather than to succeed in real-world business, and so they may promote senior leaders who do not fully understand the subtleties of their enterprise. Such companies also promote a view of people’s skills as static and so fail to invest in the development of talent. Finally, they get mired in IT-based knowledge systems that constrict, rather than enhance, communication among their staff.

For Nonaka, *phronetic* wisdom represents a potential antidote. If *techne* is “know-how,” and *episteme* is “know-why,” *phronesis* is knowing “what must be done.” This requires an understanding of how the organization should exist in the world: its purpose, its reason for being. Moreover, for an organization to be resilient as well as skilled at creating knowledge, *phronesis* must be broadly distributed. A *phronetic* leader mobilizes timely

judgment in others by building a culture that is strong, nurturing, and sustained by informal connections.

Revenge and Determination

Nonaka’s insights about knowledge reflect the distinctive arc of his own career, which was rooted in his childhood experience during the Pacific War (the Japanese name for World War II). “I was in the first grade when children from Tokyo were evacuated to the countryside,” he explains. “We used to go outside and watch the B-29s in the sky over Mount Fuji, and the smaller Grumman F4F fighters flying lower. One day, an F4F dropped down and began strafing the children as we walked back from the school. It was so close I could see the American pilot in the cockpit. It looked to me as if he was smiling. I barely survived; I was very shocked. And being a small boy, my first thought was, ‘I will beat them someday!’ I was on fire with the desire to beat America.”

In his studies, Nonaka focused his energies and intelligence — even then considered extraordinary — on strengthening his country so it would never again endure humiliation. Since Japan had been defeated by superior technology and organizational superiority, he concluded it could become resurgent only by adapting the best of both. Still today, says Takeuchi, “This is the ground of his motivation. He’s still an old-fashioned nationalist, but he’s since become a universal man, which is why he can adapt Japanese practices into a universal theory.”

After technical school, Nonaka studied political science at Waseda University. Upon graduation in 1958, after scoring high on a qualifying exam for Fuji Electric, he accepted a position there. “At the time,” he recalls, “Fuji manufactured heavy industrial goods in partner-

ship with Siemens of Germany. I saw rebuilding the industrial infrastructure as the best way to help Japan become strong.”

Appointed personnel manager at a plant outside Tokyo, he started a conventionally organized apprenticeship program for skilled craft workers. He soon saw that line managers needed skill development as well. Management training was unheard of in postwar Japan, so Nonaka looked to other cultures for a model. He found one at a nearby U.S. air base where an instructor offered training, designed originally to promote industrial efficiency, to senior executives and foremen. Nonaka adapted the program for his plant, and then rolled it out at Fuji’s corporate headquarters. Soon he was collaborating with the business school at Keio University to develop a management curriculum for companies all over Japan.

“The lead professors on our team had gone to Harvard Business School and were experienced in using the case study method, which was common in the U.S. but not widely practiced at the time in Japan,” recalls Nonaka. “Because of my wartime trauma and my desire for revenge, I decided I must learn this method and bring it back to Japan so we could use it to become better than the Americans. But to do this, I needed to go to business school in the U.S.”

In 1960, he married a Fuji co-worker, and they spent the next six years saving money so he could study abroad. Meanwhile, he worked in a broad range of functions at Fuji, including industrial marketing and finance. This diverse career path was unusual in Japan, but Nonaka wanted to deliberately prepare for a broad-based mission. In 1967, Nonaka and his wife, Sachiko, arrived at the University of California at Berkeley, where

he had been accepted as a graduate student. He found work as a gardener, and she waited tables. They spoke little English and at times survived solely on tips. It was difficult, but Nonaka regards everything about the experience as profoundly fortunate.

“I was lucky that I didn’t go to Harvard. I had conducted case studies as a manager, but I needed a grounding in theory, where Berkeley excelled.” He earned an MBA and then a Ph.D. at Berkeley, studying consumer marketing and philosophy. He says, “The Western philosophers I admire draw on a tradition going back to Heraclites, who believed that knowledge comes from direct experience. This is the opposite of the Platonic view that the material world we perceive is not the real world, but a kind of shadow, and that reality exists only in ideal forms.” Platonists have traditionally been occupied with the search for universal principles, an approach that finds modern expression in the scientific method.

“Over the last few hundred years,” says Nonaka, “the Heraclitean strain has been secondary in Western thought because it is considered nonscientific, given that individual experience cannot be tested. The scientific method and the case study method both emerged from the dominant strain. They seek to discern objective principles rather than describing subjective experience, so they overlook the value of relationship and the evolving nature of human capabilities. In a world of ideal forms, there is no *becoming*. That’s why the Platonic view can’t explain how knowledge is created.”

Nonaka’s teachers at Berkeley included Francesco Nicosia, a pioneer in studying consumer decision processes, and cognitive scientist Herbert Simon (who would later win the Nobel Prize in economics). In his dissertation, Nonaka used Simon’s then-pervasive information-processing model (also known as “bounded rationality”) to explore how decisions are made in organizations through a process comparable to the algorithms and heuristics of a software program. It was also at Berkeley that Nonaka met his future collaborator Takeuchi, then a fellow student.

Nonaka returned to Japan in 1972 to teach at Nanzan University. Then he moved to the National Defense University in Tokyo, studied military history, and wrote a book (*Essence of Failure*) analyzing why Japan had lost the war. In 1981, he joined the faculty at Hitotsubashi University. In 1984, Takeuchi (who was also teaching there) invited him to participate at a symposium on innovation at Harvard Business School.



The research for that symposium proved to be a turning point for Nonaka. It brought him onto a team that studied such ventures as Canon's Canonet (a 35mm film camera released in the early 1960s) and Honda's hatchback sedans. He soon noticed that people who were inventing new products did not function like software programs or like ants, metaphors cherished by Simon and his followers. "If you look at the trail ants leave on a beach," says Nonaka, "it is not complex. It is the result of many simple decisions repeated over and over to form a complex pattern. In other words, it is your basic information-processing model. Simon believed that people in organizations made decisions using a similar model. His point of view was very influential, but here I was seeing with my own eyes

that it wasn't true. People creating things did *not* repeat simple patterns. Their decision making was neither rational nor predictable. It was intuitive and shaped by context."

Nonaka shifted his research methods, breaking with Simon's view that any method allowing for subjective reflection or observation — for example, asking people to describe how their innovative breakthroughs had occurred — would contaminate the conclusions. Nonaka, in fact, began seeking out such stories, and when his team presented the findings, it created a significant buzz. He and Takeuchi followed in 1986 with their "New New Product Development Game" *HBR* article, which argued that conventionally sequential product development methods had become obsolete.

A Matsushita product team used the image of stir-frying in a Chinese wok to describe the quick, short movements of an efficient clothes dryer.

This in turn paved the way for their research into the development of knowledge-creating companies.

A Model That Incorporates Subjectivity

In their current book, *Managing Flow*, Nonaka and his colleagues trace the developmental path to knowledge creation in robust detail. The companies in the book follow a spiraling course, with four basic stages:

- **Socialization** involves mobilizing people for face-to-face communication and immersing them in shared experiences that help them develop empathy for customers. For example, when developing its Fit vehicle, Honda sent a team to visit various European cities. Their mission was to experience the life of urban Europeans, using cars in ways that echoed daily experience. Unloading a shopping cart full of groceries plus six bottles of wine in a parking lot in heavy sleet gave team members more consumer insight than an objective survey could have offered.

- **Externalization** entails the translation of tacit experience into words and images that can be shared with a larger group. For example, a manager might invite a seasoned team of frontline workers to design a training manual that describes their own tacitly acquired skills. Metaphors can be highly effective in conveying the feeling of workplace experience. A product team at Matsushita Electric Industrial Company charged with building a high-speed clothes dryer that operated by means of centrifugal force used the image of stir-frying in a Chinese wok to describe the quick, short bursts of movement that would make a rotating drum efficient.

- **Combination** is the extension of tacit knowledge into explicit forms that can then be disseminated throughout the organization. Thomas Ueno, a self-

described “friend of JAAMS” and the principal of a forensic accounting firm in Honolulu, uses this part of the spiral to encourage people in his company to “think about big things outside our control, like markets, politics, the regulatory environment. The more we can connect [our tacit knowledge] with day-to-day challenges like marketing, the greater the competitive advantage we will have.”

- **Internalization** is the reabsorption of explicit knowledge back into daily practice. This means returning to the realm of the tacit, but with an awareness of larger and more complex issues. At Eisai, employees who had been sent to observe the elderly in hospital wards came back and talked in their project teams, exploring how the insights they had gained might reshape their own R&D practices. In time, their observations became embodied in the organization’s unconscious.

These stages reinforce one another. Nonaka quotes Katsuaki Watanabe, president of Toyota, as saying that “it is the continual dynamic synthesis of actual experience and abstract expertise [meaning tacit and explicit knowledge, respectively] that enables an organization to sustain innovation.”

This spiral path is one of several imperatives that Nonaka proposes for organizations seeking to become better at creating knowledge. Another is cultivating *ba* by setting aside time and space for people to come to a deeper understanding of one another through conversation. He also suggests that companies assiduously map and diagram the distinctive sources of knowledge that enable them to create value in the marketplace. These include experiential knowledge assets such as people’s skills and relationships; process knowledge assets such as routines embedded in daily operations; conceptual

knowledge assets such as product designs and brand equity; and systemic knowledge assets such as patents, licenses, intellectual property, and databases. Identifying them enables an organization to more effectively coordinate its resources in the service of bringing something new to the world.

As companies grow more skilled at knowledge creation, Nonaka sees them drawing customers, suppliers, competitors, education partners, and communities into these processes. At the same time, corporate leaders must decide how much autonomy to grant employees, balancing the need for flexibility with the need for control. Carroll Creech, former CEO of Snap-on Tools Japan, a division of the U.S. global manufacturer Snap-on Inc., understands this paradoxical challenge. “Nonaka-Sensei,” he says, “does not look at the constituent parts of an organization or the issues it faces as separate things. He sees an organization as a set of relationships that work together in ways that affect the whole. Having enough patience to *not* cut things short and say, ‘What’s the bottom line here?’ is essential if you want to compete in a global economy that demands constant innovation.”

Of course, not every company in Japan is a paragon of knowledge creation, as that country’s perennially troubled financial sector makes clear. But the examples Nonaka uses in *Managing Flow* and *The Knowledge-Creating Company* demonstrate what the Japanese are doing right. It’s as if his original desire for revenge on the West has been fulfilled, but in a way he could never have anticipated. Japan has become a sort of management conscience to the rest of the world, and through its best companies, an exemplar of superior achievement.

There’s a parallel here to the role information technology has played over the last four decades. IT began as an innovative paragon, became a flawed workhorse always falling short of its potential, and emerged as a strategic partner transforming the role of enterprise in the world. This history, like that of Japanese management practice, makes clear that the full measure of humanity must become manifest in the machine if knowledge is to be created; treating humans as interchangeable parts will always lead to a creative dead end. Nonaka’s great con-

tribution has been to offer a vision for channeling creativity into innovation and a method for bringing it forth. In the end, the *phronetic* manager capable of integrating the analytical power of *episteme* with the poetry and technique of *techné* can achieve extraordinary results while helping to make the organization whole. ✦

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Resources

Aristotle, *Nicomachean Ethics*, translated by Terence Irwin (Hackett, 1999): Original source on *phronesis* and other concepts that Nonaka draws upon.

Denise Caruso, “The Real Value of Intangibles,” *s+b*, Autumn 2008, www.strategy-business.com/press/article/08302: The case for standards for appraising the worth of nonphysical assets like brands, human capital, and tacit knowledge.

Kevin Dehoff and John Loehr, “Innovation Agility,” *s+b*, Summer 2007, www.strategy-business.com/press/article/07208: Knowledge creation lies at the heart of Toyota’s groundbreaking product development process.

Peter Drucker, *Adventures of a Bystander* (HarperCollins, 1991): Autobiography of the great management writer, with a chapter on the Polanyi family.

Michael Farber, Tom Greenspon, and Jeffrey Tucker, “The Practical Visionary,” *s+b*, Spring 2008, www.strategy-business.com/press/article/08106: The new role of the chief information officer may make it easier to implement knowledge management as a process centered in human conversation.

Tim Laseter and Rob Cross, “The Craft of Connection,” *s+b*, Autumn 2006, www.strategy-business.com/press/article/06302: Discusses how organizational network analysis is helping companies share knowledge worldwide, one natural broker at a time.

Ikujiro Nonaka and Hirotaka Takeuchi, *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation* (Oxford University Press, 1995): Nonaka’s first major inside look at knowledge creation, primarily at Japanese companies.

Ikujiro Nonaka, Ryoko Toyama, and Toru Hirata, *Managing Flow: A Process Theory of the Knowledge-Based Firm* (Palgrave, 2008): In-depth theory of knowledge-based management with an emphasis on the practical wisdom called *phronesis*.

Jeffrey Rothfeder, “Jeffrey Liker: The Thought Leader Interview,” *s+b*, Summer 2008, www.strategy-business.com/press/article/08210: A lean process expert explains why companies without *ba* find it so hard to emulate Toyota.

Ikujiro Nonaka’s Web site, Hitotsubashi ICS Business School, www.ics.hit-u.ac.jp/faculty/profiles/ikujiro_nonaka.html: Includes a bibliography of Nonaka’s published work.

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