The Darker Side of Lean:
An Insider’s Perspective on the Realities of the Toyota Production System

Darius Mehri*

Executive Overview
The Toyota Production System (TPS) has been lauded as the pinnacle of flexible, just-in-time manufacturing and design and the founder of “lean work” systems, which claim to improve product quality and employee productivity. American automobile manufacturers readily adopted the “Toyota Way” and many of the management practices in service industries, such as Total Quality Management (TQM) are biased on its fundamental principles. The author of this paper, Darius Mehri, is an American-born computer simulation engineer who worked in a Toyota group company for three years, observing this system firsthand and conducting his own qualitative research on what he considers the true impact of lean work: the human cost. As a participant observer who was inculcated in Japanese social and workplace culture, Mehri takes an examination of TPS well beyond what many studies American and European scholars have been able to go. His assessment is guided by a distinction which is fundamental to understanding Japanese culture and business: tatemae (what you are supposed to feel or do) and honne (what you actually feel or do). Mehri believes that international enthusiasm for the Toyota Production System results from western observers’ failure to discern the honne within the tatemae. He lifts the curtain of formality and messages from management at Toyota—the tatemae—that obscures the realities—the honne— of the Toyota Way: limited potential for creativity and innovation, narrow professional skills, worker isolation and harassment, dangerous conditions on the production line, accident cover-ups, excessive overtime, and poor quality of life for workers.

Introduction
Many Westerners find it perplexing that Japan, a country with so few natural resources, should produce such a plentiful amount of high quality goods. The American fascination, in particular, with the success of Japanese manufacturing has led to a multitude of studies on best practices and adoption of those practices in the United States. What is it that has made Toyota so competitive? How does their management style promote innovation? Many attribute the Japanese manufacturing success to a unique organizational structure called the Toyota Production System (TPS) or “lean work,” which also claims to improve quality and productivity while respecting workers’ rights.

As far as the American assembly line was concerned, TPS was the answer that the manufacturing sector had been seeking to revitalize lagging industries. By the early 1990s, the Toyota Production System had already proliferated throughout the United States, particularly in the manufacturing heartland of the Midwest. A 1992 study of organizations with 50 or more employees found that nearly 80 percent had adopted practices associated with TPS (Osterman, 1994). A separate study conducted among organizations of all sizes in 1993 reports that over 40 percent had some experience with adopting TPS practices (Brenner, Fairris and Russer 2002).

TPS had even reached beyond the manufacturing sector to include service industries. As John Price writes, “Lean production has inspired a resurgent quality movement in North America that has spread from the factory to the warehouse and even into health care and educational facilities. Often appear-

---

* Darius Mehri will be pursuing a Ph.D. in sociology at the University of California-Berkeley in the fall of 2006. Contact: darius.mehri@gmail.com
ing under the labels Total Quality Management (TQM) or Continuous Quality Improvement (CQI), the quality movement is based largely on the model of lean production” (Price 1997).

American industry and higher education has accepted, with little question, the wisdom of TPS and the Japanese way of managing. Much of the literature purports that the Toyota Production System manages to achieve maximum production and quality while it maintains a harmonious and humane workplace. Popular literature by economists and business writers has lauded the Toyota success story and touted what others can learn from it. Praise is given to “mechanisms for total quality control, plant layout and design for quick changes and retooling” (Besser 1996). And despite economic troubles, Japan remains an economic powerhouse and its production system continues to be studied and admired.

From April 1996 through June 1999, I lived and worked in Japan as a computer simulation engineer at Nizumi (pseudonym for the company), an automobile company in the Toyota keiretsu. Afforded a perspective that few American scholars were able to enjoy, I was able not only to raise a number of questions about the ascendancy of TPS but also experience first-hand the inaccuracies inherent in American accounts of its advantages. My vantage point was unusual. Many observers have written books about new management methods in the office, in the Japanese factory, and in the so-called transplants (Japanese factories located in the United States), but until now, no American engineer has described the Japanese white-collar experience.

Every night, alone in my tiny company apartment, I recorded the day’s events. What began as the usual expatriate journal became something more complex when the Japanese economy, in trouble since 1990, took a drastic downturn in 1997. Then I saw Japan’s management system—highly touted and imitated in the United States and elsewhere—placed under desperate stress. My entries recorded group dynamics, health and safety issues, gender relations, and company restructuring. I came to view the lauded TPS system with a certain level of skepticism; with first-hand knowledge and first-person accounts of the impact the system has on worker safety, stress, creativity and innovation, overtime, and low morale, I came to question the assumed value of its rigors. TPS had achieved high productivity, yes. Toyota maintains a powerful global market share, yes. Their product development process is relentless at achieving continual improvement, certainly. But at what price?

I was able to experience the 1997 recession and the company’s response to it from several perspectives. I worked with Japanese engineers on product design teams, and I was fortunate to be included in their parties and other social occasions. But as a foreign worker, I also had many friends among foreigners on the assembly line. I learned from them about the hazards of lean production in the factory, particularly as line speeds increased during the economic downturn. I also learned how management coped with the economic emergency by using foreign workers and by outsourcing within the Toyota keiretsu or conglomerate. My journal soon became a record of the company’s culture and its managerial adaptations during the economic downturn.

**Nuts and Bolts: Methodology**

This article, and the book from which it was adapted (Mehri 2005) is based on my years as a covert participant-observer at Nizumi. Nizumi is an upper-level Toyota group company. It employs over 7,000 workers, maintains more than five offices and factories throughout Japan, and its 2002 sales were over $5 billion. It also maintains a number of sales offices and factories in foreign countries. Nizumi is an original manufacturer of products for Japanese and foreign markets and has its own distribution network. The company also supplies parts for Toyota Motors, and, like most companies within the Toyota industrial pyramid (the keiretsu), it relies on connections with Toyota to maintain and expand its market share. Although Nizumi is an independent company, it has been an official Toyota keiretsu affiliate for several years, and as a result has adopted the Toyota style of management. Toyota considered the plant so thoroughly steeped in “lean work” that it sent Americans from its transplants to Nizumi for training.

Nizumi workers have been thoroughly immersed in the various practices of the Toyota Production
System (TPS), such as just-in-time and pull manufacturing. To maintain control over its companies and to ensure implementation of the TPS, Toyota manages the daily activities of Nizumi through Nizumi’s top managers, president, and board of directors, many of whom come directly from Toyota. The complexities of this total system are not evident at first, but my three years working as a contractor at Nizumi have equipped me to provide an insider’s look at both the TPS system and how it reveals its true nature over time. While descriptions of people and processes are drawn from my journal and from interviews, I have changed names and certain non-essential details to respect the privacy of my former colleagues and the proprietary nature of my engineering work for Nizumi.

In addition to the direct observation I recorded in my journal, I also conducted over 75 interviews with employees, politicians, lawyers, labor scholars, and members of the community. The interviews ranged in duration from ten minutes to two hours. About three-quarters of those interviewed were Nizumi workers. I interviewed temporary laborers, contract employees, and mid to high-level managers. I interviewed engineers and union leaders and workers on the line. Some 20 percent of the workers I interviewed were foreign, temporary workers, while the rest were permanent Japanese workers. I conducted approximately two-thirds of the interviews on company grounds. These were informal talks. The remaining third were held outside the company and were more formally structured.

Kicking the Tires: Literature on Japan’s Management Model

By the mid 1980s, when the Japanese economy was growing at a steady clip and its work system was relatively unknown, books on the Japanese economy and workplace were becoming more popular. The most notable books on the subject include James Abbeglen’s *The Japanese Factory: Aspects of its Social Organization* (1958), Robert Cole’s *Japanese Blue Collar* (1971) and *Work, Mobility and Participation* (1979), Ronald Dore’s *British Factory, Japanese Factory* (1973), Thomas Rohlen’s *For Harmony and Strength* (1974), and Rodney Clark’s *The Japanese Company* (1979). Focusing on the organization and social structure of the corporation, these books emphasize Japan’s “corporate welfare.”

Corporate welfarists claim that Japanese companies have a unique labor-management relationship: they function as social support institutions where workers are engaged in an interdependent relationship with management. This relationship requires workers to be loyal and cooperative. In return, the company provides stable employment and worker participation through consensus decision-making.

According to the corporate welfare school, the company works as a benevolent family. Labor policies benefit both workers and management, employment is guaranteed for a lifetime, teamwork is pervasive, and the wage structure is based upon seniority. Some have claimed that as a result of lifetime employment, a “community of fate” develops among employees, resulting in an intense loyalty to the firm. These claims have created a pervasive belief that in Japan, employees work in an environment which functions more like a nurturing family than like a highly competitive profit-making entity. Cole (1979), Abbeglen (1958), and others have written about familial ideology and its impact on worker behavior. Some say that the reason the Japanese are such disciplined workers is because of this family-like environment.

One notable book by a native Japanese, Satoshi Kamata’s *Japan in the Passing Lane* (1982), offered an alternative view of life at a Japanese company when it was originally published in 1973. Kamata demonstrated the hardship of life on the line at Toyota and claimed the company was more interested in high productivity than in the welfare of its workers. But Kamata’s book remained largely overlooked.

The predominant thinking in the management discipline and manufacturing industry is aligned with the “production school.” Its adherents believe that the Japanese miracle owes much to “just-in-time manufacturing” where parts are delivered on time to reduce inventory costs and “pull manufacturing” a process where a worker can stop the line if he or she sees quality problems. The most prominent book from the production technology school was *The Machine that Changed the
World by Womack, Jones, and Roos, based on research funded by GM and the IMVP consortium at the Massachusetts Institute of Technology. The authors explain that the Japanese production system departs from the Henry Ford assembly line techniques known as Taylorism. They claim that if a company adopts the Toyota Production System techniques they refer to as “lean production,” that they will not only foster superior production but will also provide “challenging and fulfilling work for employees at every level” (Womack, Jones, and Roos 1990, p. 225).

However, for the majority of American workers, the Japanese work system had an entirely different effect than the idyllic life portrayed in the Machine that Changed the World. The flood of Japanese products in the 1980s and the resulting trade deficit led the Japanese to compensate for the loss of American jobs by locating Japanese factories in the United States. Automobile “transplants” resulted: first in Ohio by Honda, then in Tennessee by Nissan, then in California and Kentucky by Toyota. With these plants came a supposedly new form of organization based on the Japanese concepts of empowerment and the team. Management claimed that there was no need for unionization because the Japanese way involves cooperation, not confrontation, to resolve work issues. American trade unions naturally viewed that as a sham and a threat.

Parker and Slaughter’s Choosing Sides: Unions and the Team Concept (1988) defines lean work as “management by stress” that exposes workers to a high degree of exploitation. Fucini and Fucini’s Working for the Japanese (1990) condemns lean work as being insensitive to the needs of workers. Other publications that show a more realistic side of the Japanese miracle are Laurie Graham’s On the Line at Subaru-Isuzu (1995), Terry Besser’s Team Toyota (1996), and Rinehart, Huxley and Robertson’s Just Another Car Factory (1997). These publications are localized studies of the basic techniques of the Toyota work system that has dominated the “new” lean way of automobile manufacturing in the past two decades. Although Womack, Jones, and Roos claim that the fundamental principles of “lean work” can be applied to any industrial organization with the will to incorporate new and innovative techniques, more recent scholars claim that “lean work” is a regression to the old practices of Taylorism.

In actuality, lean work has little to do with improving the lives of workers and much to do with producing vehicles with the least amount of money in the quickest time. Recent studies show similar conditions to those Satoshi Kamata documented at a Japanese Toyota factory in 1972, and his book is now held in high esteem. I found Kamata’s account to be highly accurate and applicable even today, 30 years after it was first published.

**Peering Under the Hood: A Closer Look at the Toyota System**

On my first day in the office, when I sat down, I noticed a purple, pocket-sized pamphlet on my desk. It was titled “This Year’s Company Goals.” A short slogan beneath the title read, “Working together towards Nizumi’s Goals in the 21st Century.” The first page of the pamphlet stated three of Nizumi’s long-term goals. The first was to “Create a flexible and robust corporate structure, which is able to respond to the changing corporate environment, and an attractive corporate culture, in which employees experience the joy of working, based upon mutual trust between labor and management.” The second goal was “To unite all Nizumi’s strength to continue inventing new values and to strive for a profitable and powerful existence in the 21st Century.” And the third goal read, “contribute to a prosperous and comfortable society in harmony with the global environment and the community.”

The body of the pamphlet discussed the main goals for the fiscal year, such as cutting costs and implementing the “Mid-Term Management Plan.” The last page listed the standard of conduct employees were expected to follow. Workers were to “recognize the value of bonding with society and becoming good citizens.” All morning, I saw purple pamphlets poking out of the pockets of managers but most employees just left them on their desk. That subtle cue would later be a pervasive theme that punctuated my experience: what management said and did were two funda-
mentally different matters, and what employees said and how they felt about their experiences, were just as divergent. By extension, what Western observers had reported about the Toyota Way and Team Toyota missed fundamental elements that were obscured to them by the opaque nature of Japanese social and cultural norms.

Working as an engineer for three years in Japan, I learned first-hand that there was a darker side to the lean production model. I had heard wonderful things about working for Japanese companies – especially about how they valued the team. I heard that one of the reasons American cars were falling apart was the lack of teamwork in their production. And I hadn’t yet read *The Machine That Changed the World*. I didn’t read the book until much later, after I had spent three years working in Japan, at which point I was in a good position to judge its accuracy.

The inaccuracies of the *Machine that Changed the World* further motivated me to provide my viewpoint about work at a Japanese company. For instance, one of the supposed benefits of lean work is that it requires only half the manufacturing space than might be expected. But the reason lean work consumes less space is not due to a superior production system but to gross negligence by the company, which subordinates the safety of its workers to lowering plant costs. At Nizumi, I was shocked to find machinery jammed into every square inch on the line, creating constant safety hazards.

Books like *The Machine That Changed the World* just look at the numbers without any regard to the human costs of lean work implementation. They talk about high productivity and extol the fast assembly-line speeds. But on these lines, workers must work every second of every minute, without a moment for a break. After leaving Nizumi, I was introduced to the director of the Aichi Labor Institute in Nagoya, who sat me down with a fifteen-year veteran of Toyota Motors. I asked this worker about lean work, and he replied that the line speeds are so fast that “workers do not even have a second to wipe the sweat off their faces.”

Some workers that I knew were considering what they would do when their Nizumi contracts expired. They considered working at the Toyota factory where SUVs were manufactured, but one of them told me that although the pay was good, he refused to work in such a dangerous environment. The lines were even faster at Toyota plants than at the group companies – and they were much too fast even at Nizumi.

In the 278 pages of *The Machine that Changed the World* there is not a single quote from the people who work within the system: the employees who dedicate their lives to hard work on the line and in the office. While the book is highly influential, it has also been criticized by scholars around the world as a gross misrepresentation of the Japanese work system and as a threat to trade unions everywhere.

**A New Theory of Japanese Management**

Based on my experience as a participant-observer, I would suggest that another theory of work beyond production technology governs life at Toyota. This theory holds that a “culture of rules” determines what goes on in the Japanese workplace. All rules fall into three major categories. The first category is the written rules that are distributed in company booklets or are printed and hung on company walls and bulletin boards. The second category comprises unwritten rules that are learned through observation or experience at the company, particularly in his or her section or team. In the third category are rules that are learned culturally, simply by being Japanese or living in Japan. These rules include the proper language and gestures to be used in speaking to a superior.

Rules were also of two different types: formal and informal. Formal rules were those that could be enforced through social mechanisms of control or by management. Informal rules were those that could not be enforced, such as slogans or mottos. Some rules overlapped categories and types, but collectively all the rules help construct an expected code of behavior. A culture of rules coerces employees to share attitudes, values, and goals as defined by the group, the team, or the entire corporation.

The company hierarchy and relationships within the groups provide the organizational structure within which the culture of rules is com-
municated and enforced. The family ideology of the company defines management as parents and employees as children—an embedded hierarchy that binds workers, management, and their rules. Breaking a rule leads to punishment in which the errant employee is used as an example to others. Employees learn about these rule-infringements and their consequences through drinking parties and company gossip. Social mechanisms of control such as monitoring and bullying help keep the workers in line. Monitoring provides the information for the bullies to use. Bullies are typically members of an old-boy group who have developed a close relationship to an important and powerful manager. The open-space office at Nizumi (and most Japanese companies) facilitates both monitoring and bullying. It is important that the employee who is the subject of harassment be humiliated in front of other members of his group.

Employees are expected to follow all rules and obey the prescribed code of behavior that exists at the company. Rules at Nizumi are generally context-oriented in that they apply to the section, team, or group whose leaders create and implement them. At times the rules are vague, allowing management the flexibility to blame the workers at will. The future of the employee depends on how well that person follows the rules his boss has laid down. The most powerful rules are unwritten and can only be learned by observation. Breaking an unwritten rule, however, can expose a worker to harassment and punishment.

Although recent studies provide valuable insight into work at Japanese companies, they focus on work either in the office or on the assembly line. My ethnographic study, however, examines both kinds of work. The TPS is certainly lean, but it is also unhealthy and dangerous. This book questions the very fundamentals of the lean work system. In the office, “lean” means engineers are overloaded with tasks. In the factory, it means that workers on the line are continuously at risk of being seriously injured. It is not coincidental that none of the employees at the company, neither at the office nor in the factory, have an effective union. The Japanese enterprise union system is merely another way management controls workers.

I also undertook a thorough examination of familial ideology that is often heralded by the “corporate welfare” school. I suggest that this ideology is used to bind workers to the culture of rules, and I argue that the reason the Japanese are diligent and disciplined workers is not because they feel an obligation toward a company that provides them with many benefits, but because they are working within rules that tightly control every aspect of their behavior. Workers acquiesce to the demands of management simply because they have no choice. In observing and documenting the role of women at Nizumi, I also saw how women are coerced into traditional gender roles.

Finally, there are two concepts inherent in Japanese culture that must be explained in order to understand fully how national culture impacts the culture of work. Indeed, the distinctions in Japanese culture between what one publicly admits and privately feels often obscures real meaning in situations for non-Japanese, and especially Western, observers. My Japanese colleagues often talked to me about a distinction which is fundamental to understanding Japanese culture and business: tatemae (what you are supposed to feel or do) and honne (what you actually feel or do).

Imagine getting a haircut in Japan. When the barber begins cutting, you notice he is making many mistakes. When he is finished, your hair looks terrible. Yet when the barber asks “How is the haircut?” you respond, “It looks great.” You refrain from criticizing or confronting the barber because it is bad behavior in Japan to embarrass someone in public. You leave the barbershop and swear you will never return again.

In this case the tatemae was your response that the hair “looks great” when in fact your true feeling, the honne, is that you are furious because it looks awful.

In Japan, if two employees disagree with each other, it is considered bad behavior to be confrontational. You are supposed to fake a good-natured relationship and not show your true feelings. In my interviews with workers, I would often inquire about the management’s behavior and in case after case, tatemae and honne were used to explain company policy. The company’s policies were tatemae, and the underlying realities were honne.

As a foreigner I was challenged by the inherent
tatemae/honne contradiction, but I believe that the Japanese experience both the tatemae and the honne simultaneously and without hypocrisy. Japanese workers who had spent some time working abroad, however, seemed almost as baffled as I was about the complex levels of meaning in the culture they were rejoining.

I believe that international enthusiasm for the Toyota Production System results from western observers’ failure to discern the honne within the tatemae. It has been easy (but erroneous) to accept the tatemae as given, and to write about it without regard to the Japanese realities or to any possible losses in translation. But tatemae, honne, and other phenomena of the Japanese workplace release their meanings only to observers who spend time in the culture.

**The Hidden Costs of Productivity**

Discussed below are my findings on the corporate culture at Toyota and the impact of the TPS system on product innovation, the product development cycle, team collaboration, health and safety, management strategies, and employee morale. They are accompanied by descriptive evidence from discussions, company literature, and other primary sources to illustrate these points. While there is always some bias in the conduct of ethnography, in recording my journals and analyzing the data I have sought to be as objective as possible.

1. **Product Development: Innovation from Without**

Toyota is considered one of the most innovative automobile designers and manufacturers in the world—but responsibility for this moniker does not lie solely with the company’s actual engineers or talent. Instead, Toyota tends to purchase innovation from smaller companies—it doesn’t make it—or adapt designs already being used in the industry. Rarely do new ideas emerge from within the company, particularly the engineering department. With a lockstep and rigid management culture, tied firmly to Japanese culture, there is no room for expressing basic creativity in the design process. Even when engineers attempted to brainstorm or mine for new ideas, the cultural and organizational structure dampened creativity. Toyota instead relied on small consulting firms, national labs, and information from dealers and the industry on key technologies to realize innovation. They grew to rely on outside expertise and creativity, because they had to—there was a policy to create from within, but it failed.

**Problem-Solving.** A key to understanding Toyota’s approach to innovating products is the problem-solving approach used by engineers, in particular—an approach driven as much by Japanese culture as the Toyota Way. During contentious weekly technical meetings convened every Friday, I learned how Japanese engineers engaged in problem-solving. To arrive at the best design, the engineers would gather huge amounts of information, comparing new designs with previous designs. If the technology unearthed by their research could benefit the product in any way, they would include it in the many alternatives they were considering. Sobek, Ward and Liker’s research compare Toyota’s approach to product development as set-based design where “designers think and reason about sets of design alternatives. Over time, these sets are gradually narrowed as the designers eliminate inferior alternatives until they find a final solution.” They claim this method differs from the conventional practice of choosing a single design early on and iterating to improve it until a solution is obtained. I would soon learn that set-based design was used extensively at Nizumi. Comparing one design to another was considered the best way to evaluate the advantages of each.

This approach was often codified in the many memos and newsletters that were circulated in the office. My section manager once distributed a memo called “The Vision Method.” This was a step-by-step directive about engaging engineers in the set-based process. One of the steps was “Deciding the Subject.” The step read: “To achieve the goal, you must think about as many ideas as you can and write them down. Then you must choose the best idea from all of the ideas.”

In general, entertaining abstract concepts was never encouraged; instead, a focus on detail was required. I observed a similar emphasis on detail
during Friday technical meetings. A debate about the basic physics of the engineering phenomena rarely occurred. Only concrete information that could be validated through experiments or through previous designs was considered acceptable for discussion.

**Breadth versus Depth of Technical Skill.** Many scholars have lauded the deep knowledge exhibited and applied by Toyota and kereitsu engineers and attributed the company’s success in continuous improvement to deep technical skill within a discipline. However, in my experience as part of product development, it became clear that this approach has its limitations, particularly when coupled with a workplace culture that does not allow the free flow of ideas, open discussion and debate, true team collaboration, and extensive intelligence about how one’s part fits in the whole of a product or process. The narrow experience means that engineers following the Toyota Way only know one path, their own, and often must follow it blindly under the strict direction of their superiors—which fundamentally limits the ability of engineers to “think outside of the box” and develop original designs. Moreover, engineers often become stuck in one career path at one company, because their skills are so highly specialized. As one weary colleague lamented, “I would leave if I could, but no one would hire me with the economy down like this. The problem with Japanese engineers is that we are too narrowly specialized. If we are shifted from one company to another, we don’t do as well, so we are not motivated to move, even if we are unhappy with our situations.”

**The Role of Espionage in Design.** Stealing technology and industrial espionage frequently came up during conversations with employees at the company, and it was apparently a fairly common practice in the Japanese auto industry. Nizumi was incredibly secretive about sharing technology. Not a single bit of information about a product could be sent out without approval from above. In most cases, even if the products were already in production, the management refused to share the information. Even during meetings where they could clearly benefit from an open discussion, the engineers always remained guarded.

I didn’t fully understand the extent of industrial espionage until I attended the annual Tokyo Motor show. The management required all engineers to attend, and upon our return, we would fill out a document about significant developments at the show that were relevant to Nizumi’s products. As Higuchi, my boss, and I walked around the large auditorium, he pointed to some important exhibits that I should investigate. At the show, each company had a booth, and smiling women neatly dressed in company uniforms greeted the visitors. The new technology on display forced the engineers to discuss the latest developments, but they never revealed very much. They spoke enthusiastically about their products, but tried desperately to conceal any technical information that could be used by their competitors. None of the engineers engaged in open conversation, and everyone kept to themselves and traveled in small groups. I noticed one group of engineers suddenly pause to examine the shape of a certain part. The engineer at the booth watched this group closely.

When I returned to Higuchi, he said that a few years ago the Motor Show was more open. Then a group of engineers from Honda entered a Toyota car on display and made measurements of the entire vehicle. “For what reason?” I asked. “To copy it,” he said. “A few months later Honda came out with an exact copy of that car!”

**Purchasing Expertise.** In addition to borrowing ideas from industry, Toyota group companies often purchase innovation directly from outside consultants and other sources. At the same time I was helping to redesign the drivetrain of a primary product, I was informed that an engineer from the well-know German consulting firm ATN would be coming to the company to discuss our project. Why would a German engineer be working with us, privy to proprietary information? Later that day, a European colleague raced to my desk and said, almost panting, that Nizumi had hired ATN to design the product. “It’s just crazy,” he said, “ATN is going to be working on the design!”

“What?” I said. “But we’re already designing it!”

“The plan is to have ATN design their own
version of the drivetrain while we design it inde-
pendently.”

I couldn’t understand why they would go to so much trouble. Why spend the extra time and money to design it in-house when the product was being designed by an outside firm?

At the meeting, two senior Toyota engineers began by presenting their designs, laying out CAD drawings of the assembly showing every bolt, curve, and surface. The level of detail was impressive, but Rolf, the ATN representative, asked how the parts could work together without major malfunctions. His idea of the product was different from theirs. He presented a fundamental reason why they should design it his way, but they did not agree. Rolf gave another reason, and they argued back and forth. During the discussion, the senior Toyota engineers would always drag Rolf into talking about details. Rolf, however, would discuss the basics of the design, backing his reasons with fundamentals.

Then the German began talking about the Advanced XT37 design. He pointed to a part of the design that would dramatically reduce its efficiency, offering logical reasons why it would not work well. One of the senior Toyota engineers asked, “How do you know if will be inefficient if you don’t have any data!” Rolf started getting angry. “I don’t need data!” He explained again what was wrong.

He then turned to me, asking why the XT37 was not well-designed. I told him that the fault lay with casting. He proceeded to criticize the entire casting technology at Nizumi and advised how we could improve overall efficiency if we made certain changes. Then he listed all the German companies that would be happy to sell us the products necessary for these essential improvements.

Benchmarking, Not Brainstorming. A project that involved the design of a device to reduce the aerodynamic drag of a vehicle was indicative of the approach to innovation employed at Nizumi—one that relied heavily on benchmarking and inductive reasoning, rather than abstract thinking, and left little room for original ideas to emerge. Instead, elaborate systems of benchmarking existing products and attempts to improve upon their existing design within a cost margin was the strategy used in product development.

The drag is the amount of force pushing against a vehicle in the opposite direction to which the car is moving, and reducing the drag results in better gas mileage. Although drag reducers existed in the industry, Nizumi had never designed one, so we would have to start from scratch (or so I thought). For inspiration, I consulted my fluid mechanics textbook. I thought about the basic physics of the design problem and worked out some equations. After a few days, I approached Higuchi with my ideas. Higuchi looked at me askance and demanded, “How do you know this? We’ve never designed a drag-reducer before?”

Now I was confused. Hadn’t he expected me to use my engineering education and experience to develop a creative design? No, he had not. The next day, I discovered the approach he preferred. Suzuki walked into the office with a large cardboard poster showing pictures of all the drag-reducing products currently used in the industry. He’d gotten these pictures from industry magazines. Higuchi got very excited and studied each one, while Suzuki looked on proudly. We discussed the merits of some specific designs, then Higuchi told us to create CAD models and analyze them using computational fluid dynamics (CFD) software on all of them so we could compare them and see which was best. (Many companies were using CFD as a way to simulate the physics of fluid flow on products to improve efficiency before building prototypes.)
The process of comparing designs is commonly referred to as benchmarking, which was often the topic of departmental meetings. Our section leader, Uno announced we would benchmark a European competitor’s product, which was rumored to incorporate the most advanced technology in the industry. Enormous effort had been expended in displaying how the European design compared with Nizumi’s and other competitors’ similar products. Large, excruciatingly detailed charts filled the walls, comparing efficiency, gas mileage, and other indicators. All the relevant parts had been cut up and placed on a table for us to examine. Each part was compared with the corresponding parts of the competition’s products. The benchmark was so thorough that there was even a comparison of the number of bolts used to put the products together. All parts on display were documented and filed on the intranet so that any engineer in the company could have access to the information at any time.

At Nizumi, benchmarking was a crucial part of the design process. During design meetings, each engineer was required to show the main design parameters for the optimal design of the product. For example, if product efficiency was the main criterion, the chart would be a spreadsheet consisting of the design parameters in the columns and the manufacturer’s design of that parameter in the rows, with each cell containing the numerical efficiency. Each design parameter was graded according to efficiency, cost, and ease of manufacture. From this information, a preliminary prototype was produced, and after further investigation, the final prototype was made. Then the engineers would improve the design in the technical lab or on the computer by tweaking various design parameters and adding new technology when needed. After further testing, the part was then manufactured.

Benchmarking was used at all levels of product development: in research and development, in product design, and in market analysis. It was not necessarily used to copy other products but was thought to speed up the design process. Analysis of and experiment on an existing product was the basic approach to designing a new one. There were several technicians at the company whose only job was to take apart the competitor’s products, test them, and write up the results for engineers.

In planning for a brainstorming meeting that was called to discuss the new drag reducer, I spent many days thinking of the basic physics of the product and engaging in analysis. When the day came, each engineer was called upon to present our new product designs. I was surprised when all the other engineers brought in designs of products that had already been developed or manufactured by other companies. Suzuki (a colleague) and another engineer showed a design that came from a company’s brochure. When my turn came, I presented some novel ideas based on my analysis alone. I should not have been surprised when the other engineers took me to task for doing it now. Their approach to problem-solving was completely different from mine. They had been educated to engage in an inductive process, while as an American-educated engineer, I had been trained to use deduction. Deductive reasoning and abstract ideas were critical to who I was as a Westerner. Engineers at Nizumi, however, had to rely on previously documented engineering results when they set out about creating a new design.

The inductive process, along with the authoritarian hierarchy and a disinclination to engage in debate was one reason why Nizumi was rarely innovative. When it came to the details of a design, the Japanese were brilliant, but when it came to creativity, they were disappointing. Several Japanese engineers themselves agreed that they were “good at manufacturing products, but terrible at innovation.”

Although genuinely new ideas were rare at the company, management policies theoretically rewarded innovation, and we were often pressured to produce patent submissions. Uno (the section manager) talked about the heat he was receiving from Abe (the division manager), who was pressing for more submissions from our section. He intended to use these to evaluate us as workers. A bitter look came to Higuchi’s face, and the excitable Takanashi jumped up and started arguing with Uno. His work was to develop computer code, so he would never be submitting a patent, and he didn’t want this to hurt his evaluation.
Suzuki asked me one day if I had submitted any patents. I told him I had been too busy working on my computer programs, but he told me it didn’t have to take much time. He reached into a folder and showed me one of his patent submissions. He said he had plucked the idea for it off the Internet.

One thing that both surprised and pleased me at Nizumi was everybody’s eagerness to embrace new technology. Management always urged us to incorporate the latest technology in the drivetrain product. Although Abe was a high-level manager, he actively researched the new technologies. His primary sources of information were Western consulting firms, American and European universities, and technical conferences. Western consulting firms helped Abe decide which technologies to develop, and he handed this information to his subordinates, who determined whether the technology was viable for the manufacturing process. It was as if learning new technology was the duty of every engineer, and the organization supported this attitude for fear that the competition would gain market share. While it was a forward-looking process and commitment to innovation, it was set within a context that emphasized incremental improvement and not engineering breakthroughs. Although I still believed that Toyota’s product development process was driven by excellent and thorough engineers, I needed to reassess my prior assumption that it represented excellence and innovation in engineering.

2. Engineering Silos: The Many “Is” in Team

Part of the innovation problem emerges from the relative isolation in which most engineers actually worked. The perception of the Toyota Way is that engineers, in particular, work in groups and teams that rely on collective knowledge to spur innovation. But, in reality those teams represented rigidly defined groups of like employees who took direction from the manager and worked independently of other team members without much consultation or collaboration. There was no free flow of information in the product development process. There were no open conversations. Non-managerial engineers did not share their managers’ comprehensive sense of how all of the parts work together, but instead focused solely on their small part in the whole. Indeed, managers would order their subordinates to carry out certain job tasks, while controlling the flow of all information. Often, when Western scholars describe teamwork, they infer that all Japanese engineers—even lower level engineers—share information and collaborate. However, this is simply not true. All information and work was controlled from above. Even in the lunchroom, there was no open talk about technology or sharing of ideas.

In addition, there was little, if no, collaboration or communication across teams. The research and design teams, for example, simply did not talk to one another. All directions come from above. Indeed, one of the only ways it was possible to get information from another team was if you personally knew the manager of another group or during an Obeya (big room) meeting organized by managers, as described below. Even the social structure made it difficult for members across teams to have informal interaction or discuss projects.

Again, initial impressions of teamwork at Toyota in general and Nizumi in particular do not always belie the subtleties of the development process or the life of the workplace. Indeed, in my first department meeting, I was fascinated by synopses of the Manager’s Meetings that had been held earlier that week. I was especially impressed by the wide-ranging nature of the discussions and by the value placed on improving quality at the front end of the design process. I was also impressed by the emphasis on market share and product quality instead of stock values and company profits. Hearing about these meetings reinforced my initial impression that the company thrived on the free exchange of information and did its best to support its employees. However, as time progressed and my experience deepened, I realized how easy it was to misperceive how the Toyota Way was implemented in the workplace. The reality turned out to be far from the theory.

Working as an Engineer. As I worked on designing the part for the new drive-train, I became frustrated by the lack of information that my direct manager provided. I always received information on a piece-meal basis. At times it was as if he was giving me secret “hints” about the technology, and when he finished, there was often an awkward
silence as I waited for more information that never came. Even the engineers in my section were not as forthcoming as I expected. During the drive-train design process, I learned a senior manager was holding a contest to come up with the best new drive-train designs. At the meeting to discuss the details, I was surprised when Kurata, who was the highly placed Director of the Design Division, bluntly stated that the company’s foreign competitors had moved ahead of Nizumi. When I returned from the meeting, I approached members of my section and asked them what they thought about the new designs. To my surprise, they reacted defensively and avoided discussion, as if I was trying to steal their secrets.

Because of my frustrations with Higuchi, I was interested in learning how my colleagues interacted with their bosses, so I observed them closely. A superior would yell out the name of an engineer, who would drop what he was doing and rush to his desk. They would talk about the issue—usually loudly enough for everyone in the section to hear. Although the engineers would sometimes raise issues and make objections, in the end, they deferred to what their manager said. Finally, the superior would give the subordinate a direct order and the engineer would respond with a “hai wakarimashita” and walk away. Both sides avoided a direct clash of ideas. Now I saw why others had been surprised whenever I raised objections. Although I was only trying to create the best design, I was breaking the rules of social conduct.

The concept of “the team” is supposedly central to Japanese business and manufacturing, but from working at Nizumi, I find the term “group” to be a more accurate description. In my section, all the engineers worked in groups of three or four. Each group was composed of engineers who had specific skills. We all worked on projects of little relevance to the others in our group, yet we were all supposed to be working on the same product.

I belonged to the analysis group—composed of myself, Higuchi and Takanashi. The goal of the analysis group was to provide the corporation the latest in advanced computer simulation technology. Far from feeling like a member of a “team,” I worked alone on most projects and simply reported to Higuchi with the results. I worked on designing products while Takanashi worked on developing high-end software that the management hoped would eventually be used by other engineers at the company. Although we were both part of the analysis group and happened to be improving the same product, our tasks were simply not related.

Teams on the Line. Nor was the idealized team concept apparent in the production process. I was acquainted with a number of production workers at the Nizumi factory, who became key informants regarding the workings of the production system. One production worker, a Thai immigrant named Sanan, explained to me that he only received brief training as he was immediately immersed in the Toyota Production System. His job on the line was to fabricate a part of the drivetrain, and his general duties involved spot welding the inner and outer portion of the part in repetitive steps. On Sanan’s line, each section was divided into several work groups, each responsible for manufacturing a part of the product. I began to wonder about the concept of the “team” that I had heard so much about with reference to the Japanese workplace. There was certainly no teamwork in my job, and none of the workers I interviewed talked about teamwork either. So I asked Sanan about teamwork. He said in most cases, the employees did not function as a team. If something happened on the line, if someone needed assistance from another group member—nobody helped. “Everyone just does their own work. When you start out at the factory, if you have questions, people help you, but not after you’ve learned your job.” According to Sanan, the most direct manifestations of group activity were safety drills, meetings, and competitions.

Competition between Divisions. The notion of competition pervaded Nizumi’s organizational culture, and often contributed to strained relations across divisions. This reality became very clear when I attempted to spread some of the technology I had developed in our group to other departments in the company. The method I had devised to automate CAD part creation dramatically sped up the design process, and I thought it would be of use to the Design Division. I thought that if I convinced the lead of the Design Section,
Oda, to work with me on this project, perhaps my ideas might be implemented throughout the company.

While I waited to hear back from Oda, I approached my own boss, Higuchi. I mentioned that I would like to work with Oda and show him the new technology I had developed. Higuchi looked worried. “Those design engineers never listen to my advice. Whenever I have anything new to tell them, they’ve always been too busy to listen.” I told him if the technology was successful that I wouldn’t mind starting our own CAD group with the section. Higuchi seemed even more upset with this suggestion. “The problem is if you work on one of their projects, they will ask you to work on another, and another, and then you will be too busy to do our work.” I promised him that wouldn’t happen, but he continued to resist. I was eventually able to convince him to let me give a simple demonstration of the technology to the Design Section.

Although Higuchi allowed me to meet with Oda, he continued to be negative about working with Oda’s group. A colleague explained why. He said that managers in the Design and Research Division did not get along. “Once I worked on a project with the Design Department, and Uno found out and got very angry with me,” he said. “In a meeting with my group, he pointed his finger at me and yelled, ‘Don’t you ever work with the Design Department again!’ Since then, if it’s necessary to work with them, I just do it secretly.”

According to my colleague, the conflict began in the mid-1980s, when the gikan, an extremely powerful manager who provided the company with technical “vision” decided that Nizumi needed a separate research department. Previously, research and design existed as one department. When many top engineers were recruited from design to join the new research section, funding became a serious issue, and the research established itself as an elite group. As a result, the two groups spent much time and energy vying for power instead of spending time improving the technology. Communication between the sections practically ceased.

After the demonstration, my tool was received so well that Oda wanted me to join his group. I was flattered, but told him that I wasn’t interested, for I had come to like working with Higuchi. Later on, when I talked with Oda about the project again, his plans were vague. I didn’t hear from him for several days, and every time I approached him to hold a design meeting, Oda evaded the subject. Finally, I realized that my colleague had been right, after all: you had to choose a division, you could not be in both.

Working as an American-educated engineer was not without its frustrations. The way I learned from Higuchi and discussed the technology was very different from the way I learned in the West. I would frequently ask him questions about design considerations. He would respond with very specific answers, never discussing the concepts abstractly. All discussions about technology were concrete. While I would always begin my talks with Higuchi with a discussion of basic ideas, he would immediately focus on the details. Once when I brought him 3D pictures of a design I was considering, Higuchi bent forward and put his head right up to a small part of the model. He said, “What about this?”

“What?”

“This,” he said, pointing to a tiny speck on the model. I thought he was pulling my leg—but he was serious. I was beside myself that he would consider such a small detail while ignoring the beauty of the overall design. But remembering I was a kohai (the subordinate) to him, my senpai (mentor), I just said I would look at it and went back to work.

I did express my disagreement sometimes, but this was invariably frustrating and time-consuming. Higuchi was usually surprised that I would question his wisdom at all, and we would discuss the issue at length, arguing back and forth, with me focusing on the abstract and him on the details. In the end, he wouldn’t budge, so we would end up right where we had started.

In retrospect, most of the time he was correct. After all, he was the more experienced engineer. But what I found irritating was the assumption that there was only one way to approach the design project—his way, to focus on the concrete. Unless I had concrete results to show him, he wouldn’t even consider what I had to say. How-
ever, if I could prove my ideas with results, he
would affably and easily change his mind.

3. The Price of Toyota’s Production System:
Worker Health and Safety

“Safety number one!” The slogan was ubiquitous. It hung over the entrances to the factory, it appeared in the dozens of pages of literature we all received every month, and one day when I came to work I saw that all the managers were wearing “Safety Number One” arm badges. I asked Higuchi about these badges, and he told me that a senior manager had ordered them to be worn because of a recent accident in the factory. An employee had been hit on the back of the head by a piece of machinery and had been sent to the hospital. However, the person injured wasn’t an ordinary assembly line worker. He was a college-educated engineer on his obligatory six-month assignment to the factory. During their first year of work, all engineers at Toyota’s largest companies are required to work six months in the factory.

A commitment to safety at Toyota is proclaimed in every corner, hallway, desk, and station on the line; however, I witnessed that it represented little more than a public relations gesture or, worse, a way of shifting responsibility for safety onto workers and away from management. What I learned about the frequency of injury, the long hours, working conditions, and pressure placed on production workers soon made the company’s official line about safety ring hollow.

A few weeks after the engineer was injured, I was in the factory to examine some parts. A large banner hung on the side of the main factory building reading, “It’s safety week, let’s work hard to make our shop clean and safe.” Beside the slogan was a large green cross symbolizing safety. I thought the company was actually implementing a real safety program. Surely management wouldn’t bother hanging this banner if they weren’t serious, would they?

A colleague grabbed my shoulder to pull me away from a forklift that was being driven at high speed, saying, “Be careful, it’s dangerous around here.”

I pointed up to the banner and yelled over the din, “What’s this about?”

“It’s because of the shareholder meeting. The company wants to make a good impression.” Laughing, he continued, “Every week is safety week at Nizumi—but it makes no difference, nothing will change.” There was one way, however, that the workers were actively involved in improving safety during safety week. They all participated in a poster contest, and the winners were published in the safety newsletter.

A production worker reiterated what everyone had told me, that the line was abunai, or dangerous. The line speed was the main danger. “Working with heavy machinery is always dangerous, but the problem is they work the line so fast that accidents are frequent. Many guys at the company have lost their fingers.” On a theoretically average day, his team was required to make a total of 120 products, which mean spending three minutes on each product. However, the quota was often raised to 132 products, or more, so the production time was correspondingly reduced per product, leading to a faster pace and more accidents.

According to Shuzo Sasaki of the Aichi Labor Institute, an organization with more than 30 years of experience studying Toyota and their group-related companies, the largest contribution to accidents on the line is the fast line speeds. “Fast line speeds contribute greatly to work-related accidents and health problems. We have noticed a high blood pressure rate, hearing problems, work-related injuries, and death directly related to fast line speeds. About 50 percent of all workers have work-related illnesses but are still forced to work.”

The Institute has recorded line speeds as fast as 58 seconds per minute, but many workers claim they have not even one second to rest.

Flexible manufacturing sounds like a good idea, for it requires each worker to use a number of skills in the course of the day. But it also makes working with fast line speeds more dangerous, because it increases the overall time necessary to finish the day’s quota. Sometimes the employees are required to work on products they don’t make often and for which they have received little training, and this, too, creates safety problems.

Although the production worker I knew and his group engaged in morning safety drills and
"kaizen meetings, the line was still unsafe, not only because of its speed but also because of the factory layout. The workplace was crowded and stocked with poorly designed equipment, so there wasn't enough room to move around on the line. He complained about the jig, which is a machine to mechanically hold and move the position of parts during assembly, "When you work the jig, it turns, and sometimes your body touches the buttons which control the tools." This situation contributes to accidents."

“One guy was seriously injured. He had to put a very small part on the drivetrain, and it dropped inside the jig. When he reached down to pick it up, he bent his other arm back and accidentally hit the button. The jig crushed his hand." He told me about a time he’d injured himself on the line. "I had burned my arm from the welder and it got infected. I had to go to the company hospital and the doctor put my arm in a large bandage. When I went back to work, the group leader was angry with me! He yelled at me and sent me back on the line."

If a worker was seriously injured and couldn’t possibly go back to the line, he would receive compensation. However, the worker was required to come in to work, even if his injuries prohibited him from doing his job. In a later interview with Yoshiatsu Sato of the Aichi Labor Institute, I learned that Toyota and its group-related companies have institutionalized this hidden rule for many years. "At Toyota, even if a worker's accident is so severe that he loses a body part, he must come to the company and sit and do nothing." In this way, the company avoids recording injuries and the management can project a safe image of itself to the Japanese people.

*Kaizen, in Theory and Practice.* I visited the factory as often as I could and met with a friend from the production line, Kofi, who was a contract worker from Africa. Our brief visits gave him an opportunity to air some of his grievances, and he spoke freely of his work on the line, describing the process to me.

He said that one product after another came through while he welded them. He showed me the numbering system on the wall, which indicated the amount of products made per day. Kofi said, "When a worker makes a mistake, the line stops, and we find a solution." The worker pushes one of three lights to signal the danger level: a green light means no danger, a gold light means the worker needs mild assistance, and a red light means a worker is in danger and needs help right away. When the gold light goes on, maybe one person comes to help, but many more rush over if the light is red. If the andon cord (which stops the line) is pulled for quality problems, a team pulls the vehicle over to work on it while the line starts up again. After the problem has been fixed, a top quality-control supervisor goes to the floor to inspect the vehicle.

I brought up the issue of *kaizen* with Kofi. *Kaizen* meetings were called KYT on the line, in Japanese, *kikken yochin* training, meaning danger awareness training. “Improvement meetings are vital to the way Japanese work,” he said. It was a job requirement for all workers in his group to meet every Tuesday after work to discuss improving safety and production. Management would ask for suggestions, but since Kofi was only a contract, or temporary, worker, they never gave him credit for his ideas, even when they implemented them.

The bell sounded, and our visit was over. I returned to the white-collar world. I entered the office and sat down at my desk. Thinking about the men in the factory, I picked up one of the accident reports, and saw a drawing of a man on a conveyor belt. The man had climbed onto the conveyor belt when it was operating and had been killed. "It happened at Toyota," a colleague had said. "It’s not unusual for someone to lose their life in a factory in Japan." He handed the report back to me, and I took a closer look. The man’s head had been crushed between the car and the frame of the conveyor belt.

I learned more about conditions at Toyota when I went to a dinner party. Our host had worked at Nizumi, but recently began working on the line at the Toyota plant. I asked why he’d changed jobs, and he told me the money was better. However high pay came at a high price. He rolled up his sleeve and showed me his arm, which had burn marks on it from spot welding. He said he worked with inadequate equipment and that he was not provided with proper welding clothes.
The molten metal had burned right through his shirt.

I was surprised to hear stories about conditions on the line told by Octavio, a production worker who was a Peruvian of Japanese descent. It was one thing to have occasional accidents, but another to have reckless safety policies. Toyota was so profitable that they often boasted about their $21 billion cash reserve. Couldn’t a company that was so wealthy provide their workers with basic safety clothing and better working conditions? Not only that—Octavio told me that the line was so fast it was almost impossible not to injure yourself. He had to work constantly, 60 full seconds for every minute on the line, with not a moment to rest. At that speed, accidents were unavoidable.

In fact, that year Nizumi was designated the third most dangerous auto company in Japan. The government ranked all of the large automobile companies according to safety based on accident reports. We all knew about the safety ranking system because the report was distributed on our desks and discussed during meetings. One of the objectives of the report was to “shame” companies into improving safety. Managers began checking equipment before the day’s work. Although it seemed like a preventive safety measure, in reality it helped to relieve the company from providing compensation to injured workers. “Workers who are injured get compensation only if they can prove that the condition of the machine was at fault,” Octavio told me. “If they are to blame, they receive nothing. But it’s often difficult to decide who was at fault, the machine or the worker.”

“So who is ultimately responsible for safety?” I asked.

“Managers are supposed to be responsible for safety, so if something happens, they get in trouble. So the rule is—injured workers keep their mouths shut. Workers who break this rule are often threatened with dismissal. The only time they do not cover up accidents is when someone is seriously injured, if they lose a finger or hand, and there are witnesses. In actuality, the workers themselves are responsible for their own safety.”

Articles in the company newsletters supported Octavio’s claims. They often discussed safety problems within the context of human error. An article titled “Meeting of the Safety and Hygiene Committee” quoted the need “to implement safety control keeping in mind that human beings are liable to act unsafely.”

Many accidents occur because of lack of training. Kofi told me about an incident where both a Japanese and a foreign worker handled a piece of heavy machinery. While they were lowering it, the foreigner’s hands got stuck between two large pieces of metal, and when the guy screamed, the Japanese worker didn’t hear him. “He was wearing headphones to block the noise,” Kofi said, “but he wasn’t supposed to wear headphones while doing a job like that.” He added that management only enforced rules after an accident happens. “They enforce some rules for a short time before abandoning them again. They’re only interested in getting the work done.”

I thought about the idyllic work system I had heard so much about and wondered why kaizen had not been implemented. After all, if workers had the ability to improve the system, certainly the company would benefit. I asked Kofi about this. They did go through the motions of kaizen. When an accident occurred, many would converge on the site to study exactly what happened. Someone would write a report. However, it usually changed nothing. Kofi added, “We have kaizen meetings twice a week to try to improve safety, and sometimes they are very useful. Mostly they are not, so no one pays attention—we sleep or smoke cigarettes.” So much for kaizen.

**Accident Reports and Hiding Injuries.** How was the company able to keep its image clean? How could it get away with reckless behavior? Although Kofi had worked for more than six years at the company, and either saw or heard about many accidents, he did not know of a single incident in which the company was blamed for the problem, even if the worker received compensation. If the worker was temporary and he couldn’t return to work because of his injuries, he was immediately dismissed. If his injuries were not that severe, he would not be immediately dismissed, but his contract would not be renewed. Even if he wasn’t injured, if a contract employee was involved in an accident, no matter whose
fault it was, his contract was unconditionally terminated. No exceptions were allowed.

Even if the machine was defective, the worker was blamed. Once, when a conveyor belt brought a batch of parts, there was a power failure, and a worker injured his heel. The worker was blamed for the accident. Another time, and employee was late for work, and while running to his section, he slipped on oil that had been previously spilled on the floor. He injured his knee. “There was blood all over the place—it was so bad, that an ambulance came to the factory,” Kofi said. That worker was not allowed to renew his contract.

When an accident occurred, reports were completed and distributed to employees. In the office, they were passed to our section and in the factory they were hung on bulletin boards. They always included a detailed illustration showing how the accident occurred. According to Kofi, accident reports were often modified in favor of the company, especially if the worker was a regular employee. Lower-level supervisors would modify the reports for fear of punishment by upper-level management.

Management continually piled accident reports onto our desks, not only those that occurred at Nizumi, but also about those that occurred at a number of Toyota-group-related companies. By law, when an industrial accident occurs, Japanese corporations must provide a report to the Ministry of Labor. Those reports always included illustrations showing in gory detail workers losing body parts, getting their hands trapped in machinery, breaking bones, or getting burned. There seemed to be no end to these reports. We received them on a weekly basis, sometimes a few at a time. In many cases, a dozen or so were stapled together and dropped on our desks.

A typical example of a report discussed the injury of a 24-year-old employee. It stated the date of the accident and the extent of the injury: “a compressed chest that led to serious lung injuries.” The injury occurred when the worker stepped off a floor mat to pick up an instruction board that had dropped. The mat was connected to a switch that controlled the machinery, and when it was activated it caused the machinery to disengage. The worker’s body became trapped between a heavy piece of machinery and a building pillar.

What was the real purpose of these reports? They could certainly be said to reduce accidents by instructing workers to learn from the mistakes of others, but I questioned whether that was the company’s true intentions. After I left the company, I talked with Dr. Shinya Yamada, a Japanese labor specialist. Dr. Yamada is emeritus professor of the Faculty of Medicine at Nagoya University and one of Japan’s leading occupational health and safety experts. I mentioned the case of the young man with the lung injury, and he said the accident could have been prevented had they not located the machinery so close to the wall. Furthermore, he said that the machinery had a serious design flaw, because when the worker gets off the mat, the pause is released. A safer design would have involved a way to activate the pause with a button, so when he reached down to pick up the instruction board, he would not have been at risk.

“It’s likely they implemented the current design to keep the line moving as quickly as possible.”

Dr Yamada derided the preventive measures management suggested to workers in the accident reports. By looking at the preventive measures with Dr. Yamada, I saw the true intention of the corporation, the honne behind the tatemae, and that was to blame workers for accidents.

According to Dr. Yamada, hiding injuries is a long-standing, pervasive, and hidden rule at most corporations in Japan. He explained that companies have an economic incentive to hide injuries. “The financial management for workman’s compensation is strictly separate from National Health Care. If a worker experiences a private injury and he goes to a local hospital, he is covered by National Health Care Insurance, and the company is required to pay 50 percent of the cost. However, if the worker obtains workman’s compensation, the company must provide full payment for all medical expenses.”

Employees were also coerced into complicit silence about accidents on the job. Kofi reported that management forced many workers involved in accidents to hide their injuries to improve the safety record and to ensure that they would have work in the following months. “Workers who are
in accidents are told not to speak about where we got our injuries when we are sent to the hospital. One guy was working on a stamping job when the hammer hit him hard on the ankle. He didn’t tell anyone, but it was a bad injury, and soon he went to a hospital outside the company. I told his boss about what had happened. The next day his boss told me not to say anything about it to anyone.”

In an interview with Satoshi Kamata that I conducted after leaving Nizumi, we discussed his job as a Toyota seasonal worker. He told me, “All workers, whether they were seasonal, contract, or full time employees, would hide their injuries for fear of embarrassing the hancho, the boss responsible for safety.” As an American, I was surprised that the fear of embarrassing somebody else would keep them silent about their injuries and the dangers they constantly faced. Every line worker I spoke to said the factory was abunai—dangerous. I asked Higuchi about it. When he first entered the company, he had to work on the line for six long months, and he concurred. My colleague Shiina agreed that the factory was dangerous, but he pointed out that the workers have danger awareness training. “It’s a process where workers learn from example. They are shown pictures and told of the accident results. It’s a good idea, but managers don’t implement it. Either they’re too busy or they simply don’t care anymore, so accidents at the factory are going up.”

Working Conditions in Keiretsu Companies. According to the Japanese Ministry of Labor, small companies in Japan are especially dangerous. Statistics show that in the transportation industry, companies of 30 to 99 employees have more than four times the accident rate of companies which employ 8,000 people or more. (Japanese Ministry of Labor 1997). Working conditions were not only bad at Toyota, but also other, smaller Toyota keiretsu businesses. I met one Iranian who had worked for a small Toyota keiretsu business employing only 15 workers. In Japan, more than 57 percent of all companies have 30 workers or less, and more than 73 percent have one hundred workers or less (Japanese Ministry of Labor 1997). The Toyota group has been able to increase it profits by outsourcing manufacturing to small group-related companies. These companies are expected to serve the parent company by supplying work or parts only to keiretsu-group related companies.

“The Japanese people at the company are not bad to me, and some of them are very kind. The main problems are the working conditions and the working hours. It is so dangerous, and if I slack off some days because I am tired, my boss will get angry with me. Sometimes I must work a 24- to 36-hour shift when he needs me. I am always, always tired.” I was shocked to hear that anyone would be forced to work for so long.

“It’s tough,” he said. “There are times when a worker just walks off the job. That usually occurs during the eighteenth hour—that’s the time when the body begins to give out.” His boss showed little sympathy. “My boss benefits from my hard work because I am a good worker and stronger than most Japanese who work on the floor. But he does little to protect me, and he provides little safety equipment.” It was obvious that the workers at the small companies were the grunts of the Japanese auto industry, sweating away at jobs that are the most dangerous and least secure.

4. Management through Social Control: The Highly Controlled Social Order

In their interpretations of management styles at Toyota and keiretsu companies and in the scenes of order and organization they witness, many Western observers miss the underlying cultural currents and unspoken rules that govern the Japanese workplace. This lack of cultural relevance often causes critical details to be missed in assessing how work is accomplished, as well as how worklife for the average employee, white collar or blue collar, is characterized.

For example, one of the most striking aspects of being at Nizumi was not my actual job but the work environment. There was a total lack of privacy. Since every section was entirely open, there was not one place in the whole office that could not be seen by all members of the section. All desks were arranged in blocks of four and they all faced inward. The managers’ desks were located on the outer edge of each section making a large rectangle that surrounded the inner blocks. Each manager’s desk also faced inward towards the low-
er-ranked workers. The resulting formation meant that everyone could see what each other was doing, and in many cases, what they were reading as well.

However, I came to learn that the desks were organized according to an additional principle, one that I would not have known upon a first glance of the scheme. A colleague explained to me that there was a “power group” seated at the center of each section. He pointed his finger to the power group and said, “Those guys will be moving up in the company. That is why they sit in the center of the section. But I sit on the outside.” It was true: his desk was located toward the outer edge of the section. Those who had the power were located toward the center of the section, close to the section leader, and those who were least important were seated at the edge. So it was clear to all who was an inside member of the old-boy network and could expect to move up and become a future leader and who was an outsider destined to remain on the periphery of power. Everyone was well aware of the geography of the desks and what it denoted. My impression of the office space symbolizing egalitarianism had to be revised. The lack of walls certainly facilitated communication, particularly during technical discussions, but it also demonstrated distinctions of rank and facilitated worker control.

Japanese society is also one governed by formality and unspoken rules that, if broken, lead to criticism, harassment, and even ostracizing the offender. Rules at Nizumi govern parking, bathroom behavior, overtime, and every human and business activity imaginable. What I found most interesting about these rules was that they were phrased in the language of morality: justice and injustice; good and bad. An employee who uses the parking lot without permission commits “an injustice to the company. From now on if there is a person who does this, we will severely punish that person, so please obey the rules on this document (do not be a bad member of the company).”

Breaking these rules impacted a worker’s career. My colleague told me a personal story about what had happened when he broke a cardinal rule. Upon returning home from his stay in America, he was eager to publish his research results in an engineering journal. First, he approached his old boss and asked him about submitting a paper for publication. He was told it was a good idea. Then he asked his current boss. But when the current boss discovered he had gone to his former boss first, his current boss angrily rejected his request. The result was that, after many years of hard work, my colleague never received the opportunity to publish his paper, which might have contributed to a substantial promotion. He said that after living in America, he had forgotten this important company rule, a rule that mandated one must always report to one’s direct superior before approaching anyone else. By making an example of my colleague, his current boss was telling all of the employees in the section to obey the rules, written and unwritten.

As an American socially conditioned to value privacy, I was uncomfortable with the lack of walls, but what made me even more anxious was the way I was constantly being monitored by my colleagues. It was common practice for employees to look over the shoulders of their colleagues and to poke their noses into their computers or personal documents. Members of the section commonly opened each others’ desk drawers and read each other’s notes, letters, and papers. Nothing was private. My mild-mannered boss Higuchi would routinely approach me from behind and stick his face directly into my work to see what I was doing. This was standard management practice.

The Power Group, Intimidation, and Bullying. In Japanese society, there is no real equality: either someone is above you or they are below you (Nakane 1970). Chie Nakane makes an insightful observation about the nature of the relationship between two individuals in a senior and subordinate position in Japanese society. Often referred to as the oyabun-kobun relationship, the oyabun is the employee who obtains the status of parent and kobun of that as the child. “The essential elements in the relationship are that the kobun receives benefits or help from his oyabun, such as assistance in securing employment or promotion, and advice in the occasion of important decision making” (Nakane 1970). The relationship is one that de-
velops over many years. Within the context of work, the kobun also functioned as an oyabun to a subordinate whom he can “trust” establishing a line of hierarchy. Subordinates adopt a shared way of behaving, thinking (kangaekata), and even dressing to increase the bond with his superior. These dynamics are manifested in the Japanese workplace as another set of unspoken rules regarding social interaction, ranking, and bullying by the group in power for those who fall outside of the norm or who are not performing at a certain level. After I had been at Nizumi a while, I noticed the existence of a tightly-knit group that seemed to be a power center. What I found particularly upsetting about this group was the methods they used to establish discipline. Harassment, or what in Japan is referred to as bullying (ijime), was routine, and some unfortunate individuals were bullied on a daily basis.

Ienaga, a colleague, was assigned to work with this power group, and he initially seemed well acclimated. Although he had a quiet, introverted personality, he would often joke and laugh when the others made suggestions or comments about his work. As the weeks passed, however, these suggestions became pointed, and the criticism was more like harassment. Ienaga became nervous and withdrawn, keeping his head down as he sat at his desk. When, at a drinking party Ienaga ordered a mixed drink, his superior saw that it came with a bright red cherry, he growled that Ienaga should be drinking beer. At times, when Ienaga was asked a question during department meetings, he seemed shaken. He would stutter, and his face would turn bright red as he answered in a halting manner. It was obvious that Ienaga had the wrong kokoro for the group. A person’s kokoro, how one feels and thinks, was highly important in developing long term relationships with co-workers.

One member of the power group, whom I nicknamed Scarface, was a senior engineer at the company and good friends with Uno, the Section Manager. This relationship gave him free license to bully anyone in the section. He would abruptly approach an employee from behind, commandeer his chair, then harass him about his work, reading some of his data out loud and asking tough questions. When the employee responded, Scarface would yell, “So why is that? What do you mean? Why didn’t you use this procedure?” Some engineers maintained their composure, but others stuttered and their faces turned bright red. These incidents always occurred when other members of the group were present, as Scarface’s goal was to publicly humiliate his target. When Scarface walked into our section with wrathful gaze, the atmosphere became tense. Everybody feared him, and he relished this.

I was not spared his attentions. I hated when he poked his eyes into my personal belongings, but I answered his questions as accurately as I could and without fear. Indeed, I would almost chuckle inside. Being a foreigner, I had not been conditioned to react to public humiliation the same way as my Japanese colleagues, so instead of being frightening, the situation for me was strangely comic.

The engineers were also harassed and humiliated during Friday technical meetings. I was told that the meetings were held so that the engineers could share their results with the group. Each of us would make a presentation and the others would ask questions. I thought that this was an excellent way for us to learn about each other’s research. However, I quickly learned otherwise. The presentations were followed by marginal discussions at best, and I saw that these meetings were merely opportunities for Uno and his close subordinates to receive a report from each group and exert control. Week after week, our meetings followed the same pattern—a young engineer would make a presentation, then Uno and his close subordinates would mock his mistakes in the hopes of shaming him to become a better engineer. It was very Japanese to use embarrassment as a management tool. What should have been amiable conversation about technical issues always became a personal assault.

I sometimes wondered why I myself was never bullied at one of Uno’s meetings. I finally learned that it was all related to the hierarchy and to Uno’s insecurity about being younger than most of the managers one level below him. Most of them had once been his superiors, so to exert his present authority, now he mocked their underlings. But my boss, Higuchi, was younger than Uno and therefore posed no threat, so I was not harassed.
However, one engineer, Hiraga, did pose a threat. Once when he had just returned from a conference in America, he reported upon what he had seen of the latest technology. During his presentation, he seemed a bit confused about which technique had enhanced which vehicle. Uno interrupted Hiraga’s presentation to point this out, and they argued back and forth. Hiraga stood his ground and rebuffed whatever Uno said. Back and forth it went without cease. I was amazed at how long the argument lasted—I timed it at exactly one hour. It surprised me to see a junior manager arguing heatedly with his boss, and I wondered whether it would aid or hurt Hiraga’s position at Nizumi.

When the meeting came to a close and I returned to my desk, I turned to another colleague for some answers about why Uno behaved the way he did. He paused for a moment and said “for control.”

“For control?” I asked.

“You see,” he said while lowering his voice as to not be heard by others, “Uno is the youngest manager in his position at the company and all of the other managers in the section, except for Higuchi, were his superiors when he entered the company. Since he is younger the other managers do not listen to him so he bullies them to try and force them to do what he says.” I was amazed at what he had said. He also mentioned that the reason I did not get bullied was that Higuchi was much younger than Uno and so I did not pose a threat to his position. After all of these months I finally realized what the bullying was all about.

Conclusion

From one perspective, my more critical assessment of working conditions, cultural norms, and management practices at Toyota and kereitsu businesses could be said to be culturally biased—that a foreigner’s, much less an American’s, analysis of the impact of another culture on management styles and workplace rules should not make judgments or be critical. In my assessment I did try to be as balanced as possible, but I will express disagreement with the unquestioned, glowing accounts of a system with real, measurable flaws. The real cost of this system can be clearly and empirically seen in its adverse impact on employees—the human cost—that extends beyond cultural relativism.

Others have begun to notice. In recent years, several books have been written about the Japanese workplace, and some—particularly those written about transplants in American and Europe—have finally reported accurately about the Toyota Production System. Ironically, the book that gets it best is still Japan in the Passing Lane—written over 30 years ago and by a Japanese citizen, Kamata Satoshi. Kamata worked at Toyota for six months as a temporary worker and covertly documented his work experience. One of the many accidents that he documented was that of a worker who suffered a severe concussion when his had touched an electric cord that was frayed. Kamata talks about a newsletter he received that discussed lengthening the workday. The workers were despondent. “They take it for granted that it will be decided by the top and sent down. Then again, many of them are thinking that whatever happens, it won’t make a difference.”

What has changed at Toyota over the last three decades? Not much. I experienced the same unsafe work environment, the same oppressive mechanisms of worker control, the same power manipulations that Kamata chronicled. He described the same tatemae/hone disconnect that was pervasive in my experience.

What will change over the next 30 years? I fear that little will happen. There are some who continue to accept the tatemae without understanding the honne it belies. Toyota was recently lauded for the reduced design time in production of the Prius. But never is the impact on the health and safety of engineers mentioned. Like I was, I suspect engineers and production employees were simply pressed, intimidated, and overloaded to get the job done.

References

practices and occupational health and safety, Political Economy Research Institute, Working Paper Series, Number 30.


