THE CHINA PRICE

The True Cost of Chinese

Competitve Advantage

ALEXANDRA HARNEY

THE PENGUIN PRESS

New York

2008

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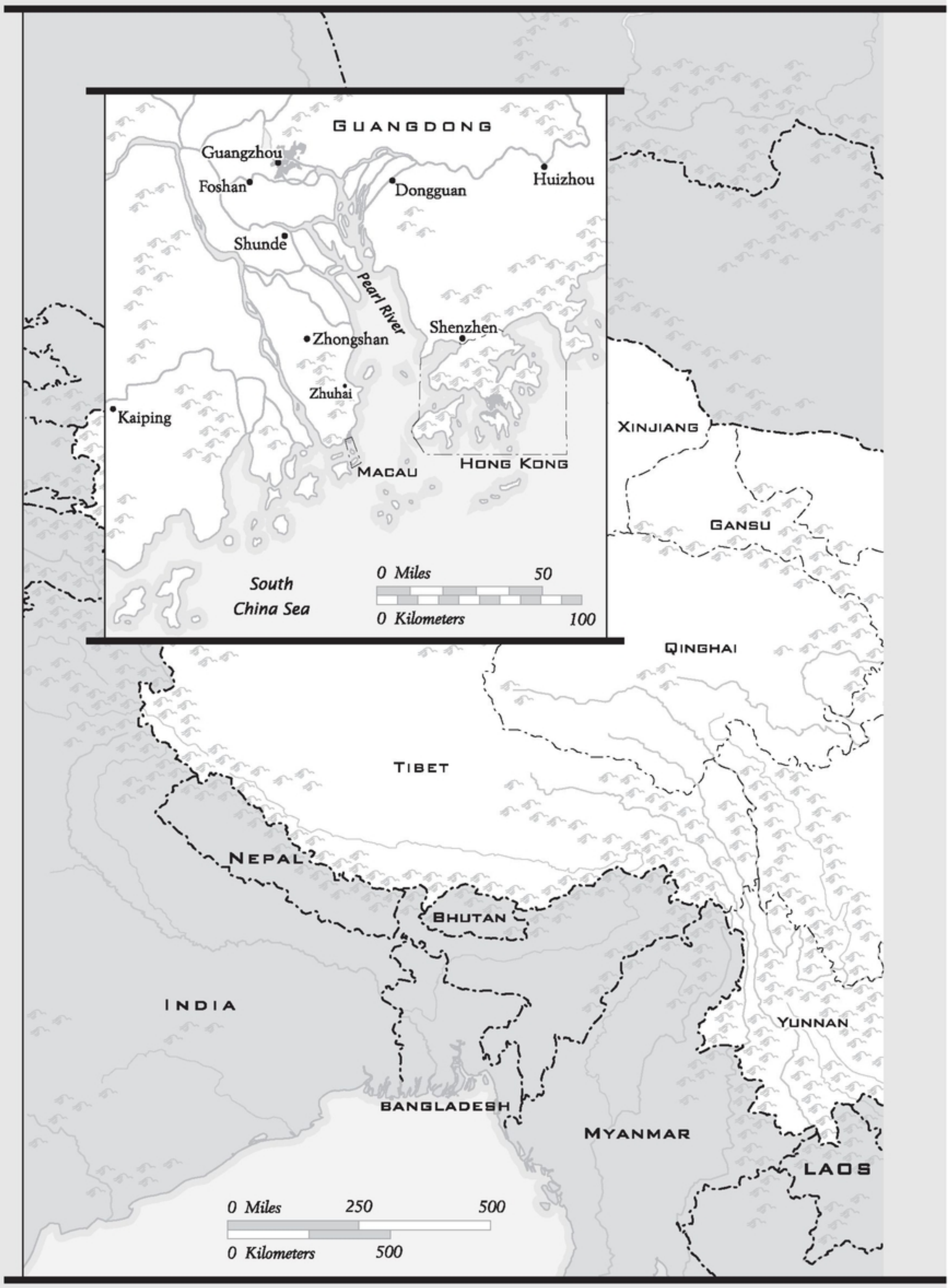

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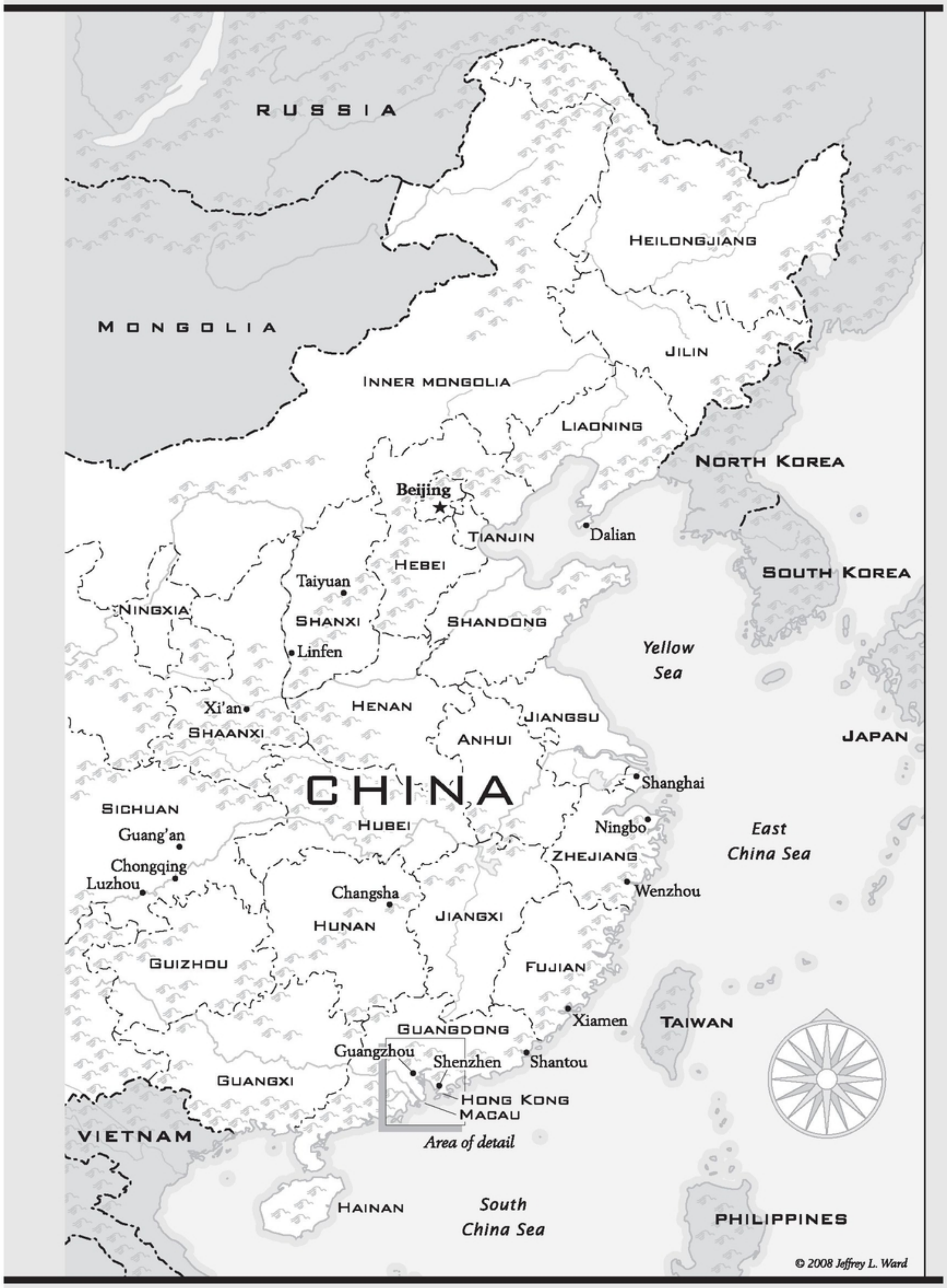
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Introduction

THE BETTER MOUSETRAP

FOR TWO WEEKS twice a year, trains and planes to the Chinese city of Guangzhou swell to capacity with crowds of foreign men and women. Hundreds of thousands of these people, representatives of the world's importers, fill the city's hotels, bars and restaurants with a babel of Japanese and Arabic and English and French. Every morning, they pile onto shuttle buses and head straight for one of the city's two colossal convention centers.

They've come to pay homage to one thing: the China price.

Inside the many massive halls of the convention centers are thousands of companies peddling countless products made in China. Sweaters, showers, power drills, plates, jacuzzis, cell phones, SUVs, plastic neon palm trees—everything, including the kitchen sink, all for half or even a fifth of what it would cost to make in America.

Over the last several years, the China price has redrawn the global manufacturing map and laid the foundation for the next economic superpower. It has put legions of people out of work around the world and become an open wound in international trade relations. And it has brought unprecedented change to the lives of hundreds of millions of Chinese.

Cheap Chinese goods have made shopping more affordable. By one estimate, products made in China have saved the average American family $500 a year.[1] But such a savings is of limited consolation to those who have lost their jobs. "The China price," screamed a *BusinessWeek* headline in 2004, has become “the three scariest words in US industry.”[2]

The China price touches everyone, everywhere. Since the start of the new millennium, China has come to dominate global manufacturing in a way almost inconceivable before its rise. The prices it offers have been so low that starting around 2003, they have become known simply as the China price.

In August 2007, Mattel recalled millions of toys made in China because of concerns about their safety. Its announcements that some of its toys contained paint with excessive levels of lead and others included dangerously small magnets touched off a global wave of concern about the quality of Chinese-made goods.

The United States has banned the import of certain types of farm-raised seafood from China because of fears that it may have been contaminated with drugs and other chemicals. Chinese-made tires and toothpaste have come under scrutiny. And traces of pollution from Asia, undoubtedly much of it from China, have been detected on the west coast of America.

Yet beyond the headlines about job losses and product safety scares, what is it we really know about China’s manufacturing juggernaut?

The aim of this book is to uncover the true cost of China’s competitive advantage. Who are the people behind the China price? How do they make goods so cheaply? At what cost to them, and to us? And how long can they keep it up?

OVER THE LAST DECADE OR SO, China has become legendary for its ability to undercut prices for everything from consumer goods to industrial machinery. The only way for manufacturers elsewhere to compete was to move to China themselves. As a writer for *Fortune* magazine put it in March 2002, “any CEO worth his salt these days is deciding not whether to move manufacturing capacity to China but how much and how quickly."[3]

"China makes you sharp or it kills you," the *Wall Street Journal* quoted Eslie Sykes, manager of a Flextronics plant in Guadalajara, Mexico, as saying.[4] *BusinessWeek* devoted a special report to the China price. "If you still make anything labor intensive," it quoted Oded Shenkar, author and Ohio State University business professor, as saying, "get out now rather than bleed to death. Shaving five percent here and there won't work."[5]

The China price has, in effect, become a brand. To most people, its brand image is a collage: cheap clothing and electronics filling the shelves at Wal-Mart, factory workers at home losing their jobs, the woman on the jacket of this book.

To executives, the China price stirs fears of a new competitor in the East but also conjures soothing visions of hefty savings. To politicians, the term has become shorthand for unfair trading practices including an undervalued currency, intellectual property violations and dumping of cheap goods. To scholars, the China price has become part of a debate on the merits of unfettered trade. And to journalists like me, the China price has looked like a giant, creaking tectonic plate, shifting the way the world thinks about the delicate balance of global trade and national good.

The debate over imports and their effect on the domestic economy isn't new, of course. American companies have been moving manufacturing offshore for decades, and American workers have understandably been upset about it for almost as long. But never has one country yielded such visible price declines on such a wide range of goods in such a short period of time. It is as though the world has been watching a second industrial revolution unfold.

Over the past two decades, China's share of global manufacturing, measured in terms of value added, has risen faster than that of any other country. Its share of the world's manufacturing output by value added was 2.4 percent in 1990; by 2006, that share had grown to 12.1 percent, making China the world's third-largest producer after America and Japan.[6]

China's exports have been posting double-digit annual growth, on average, since the 1990s. China went from exporting $26 billion worth of goods to the world in 1984 to exporting $969 billion in 2006. Global Insight, a U.S. economics consultancy, expects China to overtake the United States as the world's largest manufacturer in 2020.[7] In 2004, China replaced Japan as the world's third-largest exporter after America and Germany.[8] If current trends continue, China will surpass America to become the largest exporter in the world in 2008.

China has challenged the conventional theory of comparative advantage by making everything from basic consumer goods—the shoes, clothing and toys that other Asian countries produced during their export boom years after World War II—to higher-tech products like computer screens, iPods and cell phones. Much of this success is due to the marriage of Chinese labor with foreign capital. China's courtship of international business has drawn the world's manufacturers to its doorstep. Southern cities like Guangzhou, Dongguan and Shenzhen are filled with Indians, Brazilians, Japanese, Israelis, Brits, Irish, Italians, French and Americans who have moved to China to open their own factories or sell Chinese-made goods overseas. Wal-Mart's global sourcing center is based in the southern city of Shenzhen, just across the border from Hong Kong. IBM's chief procurement officer sits in Shenzhen as well.

In 1990, China attracted $3.5 billion of foreign direct investment. By 2005, that figure had soared to $72 billion, according to the United Nations Conference on Trade and Development. Cumulative foreign direct investment in China between 2002 and 2005 alone totaled $239.28 billion. That investment has helped produce the facilities that comprise the workshop of the world. Wal-Mart buys at least $18 billion worth of goods from China every year. Samsung bought $15 billion worth of supplies there in 2005.[9] Carmakers General Motors and Volkswagen, among others, purchase components from China. Even Boeing now sources parts for its airplanes from China. Between 1989 and 2005, China raised its share of exports to the United States in 41 sectors.[10]

In 2006, China's biggest exports by volume to America were electrical machinery and equipment, including consumer electronics and power generation equipment. But it also shipped a lot of toys and sporting goods, clothing, furniture and shoes. That year, America imported $287.8 billion worth of products from China. America's exports to China totaled only $55.2 billion.

Overall, in its trade with the rest of the world in 2006, China exported $178 billion more than it imported. This imbalance has not helped the China price's brand image. It has fueled a political backlash that threatens to undermine the country's competitive advantage.

The China price has stoked fears of a hollowing-out of manufacturing around the world. In a petition to the Office of the United States Trade Representative in 2004, the AFL-CIO, the country's largest labor organization, alleged that China's labor abuses created a reserve of cheap labor that displaced up to 1.2 million American jobs. Since then, the Economic Policy Institute, a Washington, D.C., think tank, has estimated that the U.S. trade deficit with China has led to the loss of 1.8 million job opportunities since 2001.[11]

Senators Charles Schumer, a Democrat from New York, and Lindsey Graham, a Republican from South Carolina, have argued that undervaluation of the renminbi, the Chinese currency, contributed to the loss of three million American manufacturing jobs over five years. “China’s emergence as a manufacturing powerhouse at the expense of the United States raises significant economic security concerns and the question of whether a country that loses its ability to produce tangible products will long remain an economic power,” reads a foreboding press release by Senator Schumer’s office.[12]

Many American manufacturers concur. They have filed a stream of complaints about Chinese competitors dumping their products at below-market prices in the United States, prompting the government to impose duties on Chinese-made televisions, furniture and textiles. “I must tell you that I have seen many companies around me driven out of business and some of them were my customers,” Richard L. Wilkey, president of Fisher-Barton, a small components manufacturer in Watertown, Wisconsin, told the House Ways and Means Committee.[13]

“Not all of these companies were dinosaurs—a number of them had made significant investments in technology and modern business methods to remain competitive. They had done all the right things, but were still faced with an environment in which the deck was stacked against them with regard to China.”

I first became aware of the China price when I was living in Tokyo, working as a correspondent for the *Financial Times*. In 1999, I joined a group of Japanese journalists on a trip to Honda Motor’s operations in China. The carmaker had taken over a plant in Guangzhou and was running it according to the company’s exacting standards. Flooring the accelerator in a locally made Accord at a nearby track, I physically experienced China’s potential as a manufacturing powerhouse. The car, at least to my untrained eye, looked and drove precisely like an Accord made in Japan—except it was assembled in China.

Not long afterward, for a story on the electronics sector, I interviewed two Japanese semiconductor executives. As an aside, they mentioned that they were studying Mandarin Chinese. I wondered why. The better to understand the people who would one day steal their jobs, they said.

I was used to hearing about *Japanese* people stealing jobs. Having grown up near Washington, D.C., during the height of the fears about Japan, Inc., I remembered the national panic after Japanese investors bought Rockefeller Center and Pebble Beach. Japanese cars were selling like hotcakes in America, but our cars weren’t selling well over there. “The Japanese have created an uneven playing field,” I remember being told. In high school, I studied Japanese, the better to understand our economic rival.

Now, Japan was running scared. Newspapers were printing accusations that China was “exporting deflation” to the rest of the world. China, it seemed to me, was the real challenge to both Japan and America. I resolved to study Chinese and move to China. In 2003, the *Financial Times* transferred me to Hong Kong to cover southern China.

Other people were having similar revelations. A few years later, hundreds of people in the capital of Spain’s shoemaking industry, Elche, staged violent protests against Chinese competitors who they claimed were hurting their business.[14] In Italy, the furniture and shoe industries were distraught about business lost to China. So were Scotland’s seafood workers. Poorer countries were also suffering. Mexico’s *maquiladoras* watched with dismay as orders drained away to China.[15] Poland's manufacturers, once considered low-cost, were losing ground to cheaper Chinese competitors.[16] The China price had even undercut Nigerian textile factories.[17]

Around 2003, a series of trade disputes over shoes, textiles, apparel and other products began. To mollify critics of the China price, Beijing eliminated the renminbi's peg to the dollar in July 2005 and allowed it to appreciate by 2.1 percent. It loosened the trading band around the renminbi, also known as the yuan, allowing it to rise or fall first by 0.3 percent in daily trading and then, starting in May 2007, by 0.5 percent.

That wasn't enough to placate people who argued then, as now, that the renminbi is undervalued by as much as 40 percent. The anger—and the wonder—at China's growing domination of global manufacturing continues to spread. In a matter of several years, the China price has become a mighty force in global politics and trade. It has had an equally dramatic effect on China itself.

CHINA'S EXPORT SECTOR has been a powerful engine of growth in the world's fastest-growing economy. China has the world's largest manufacturing workforce: some 104 million people, about twice the number of manufacturing workers in the United States, Canada, Japan, France, Germany, Italy and the UK combined.[18]

Some of these millions of workers are internal migrants from the Chinese countryside. Over the past two decades, China has witnessed one of history's greatest migrations. Estimates vary, but there are between 120 million and 200 million migrants in Chinese cities today. In Guangdong province alone, there are between 17 million and 40 million migrant workers.

Although not all of these migrants work in manufacturing, many do. They log eight-to-16-hour days, sometimes seven days a week, for years at a time, before returning to their villages. Their wages have been a lever lifting families out of poverty, building houses, paying medical bills and sending children to school. By one estimate, between 1994 and 2004, manufacturing accounted for 60 percent of China's economic growth.[19]

China's huge labor pool has, for some time, helped it defy the conventional logic of economics. As investment in manufacturing has soared since the 1990s, wages for the bottom tier of migrant workers have remained relatively low, making China an attractive place to manufacture labor-intensive goods.

Wages in China are extremely low compared to those in developed countries. On average, Chinese manufacturing workers are estimated to have earned $0.57 an hour in 2002, which translates to about 3 percent of the average hourly compensation of manufacturing employees in the United States and other developed countries. [20] Chinese labor costs are a fraction of those in Mexico, Brazil and developed Asian countries.[21] By one estimate, they are even lower than wages handloom operators earned in the early Industrial Revolution in the UK or workers in a Chicago lumber yard took home in the mid-nineteenth century.[22]

And yet Chinese wages are higher than those in countries in Africa and Southeast Asia. So labor is not the only factor drawing manufacturing to China. The country's other advantages—lower costs for land, generous government incentives, a stable political system, good roads, telecommunications and frequent departures by container ships—have also helped attract the foreign investment that has been the catalyst for growth in the export sector.

That investment has helped knit China into the global supply chain in many industries. Chinese customs records show that more than half of exports are from foreign-invested firms. Foreign companies bring in components from elsewhere, often in Asia, and set Chinese labor to assembling them into the final product. Today, about 55 percent of China's exports are made with imported parts.[23] Often, these goods are made by contract manufacturers, companies you have never heard of that produce goods carrying their customers' brand names.

China doesn't always add much value to a product for export, although its name goes on the label. By one estimate, the value added in China—including labor, parts and components bought in China and the profits earned by foreign-owned firms—is only a third of the value of the output in the whole export processing sector.[24] Still, what Chinese factories do, they do with great efficiency.

Just as in Industrial Revolution England, certain Chinese cities and even districts and townships within cities have emerged as leading manufacturers of specific products. In and around these cities, companies that supply material and components, repair machinery and handle logistics have sprung up to serve factories. Having materials and services nearby improves efficiency and saves on components and transportation costs. It also speeds up the supply chain because components can be sourced quickly and easily.

China's coastal export regions are littered with more than 1,000 of these clusters.[25] The city of Wenzhou leads the world in the production of cigarette lighters with metal cases. Shunde in southern Guangdong province bills itself as "The Capital of Household Electrical Appliances." One Shunde factory employs 30,000 workers and produces nearly half of the world's microwaves. In Zhili township in Zhejiang province, some 5,000 companies make children's clothing. Datang township in the same province churns out six billion pairs of socks a year.[26] More than 1,000 factories in Shengzhou in Zhejiang province make 40 percent of the world's neckties.

The city of Dongguan in Guangdong province is a leading assembly base for computers and computer parts. "If there is a traffic jam between Dongguan and Hong Kong, 70 percent of the world's computer market will be affected," one IBM executive has said.[27] Clusters like these help make the China price unbeatable, because, as Michael Enright, Edith Scott and Chang Ka-mun have noted, "competitors or potential competitors . . . have to compete not just with a set of end-product manufacturers, but with entire production chains, and in some cases subcultures, found in the region."[28]

Some of China's other advantages are more controversial. Chinese companies' widespread violations of other companies' intellectual property rights, despite promises to protect them, help keep costs down. About two-thirds of the counterfeit goods seized in U.S. ports are made in China. American politicians are right: An undervalued Chinese currency definitely helps hold down the cost of Chinese products overseas.

These factors, well documented elsewhere, all underpin the China price. But this book is about the cost China has paid to sustain these advantages. In order to get to the China price, Beijing has made economic growth its primary aim and let many laws go unenforced. This policy has created a new kind of uneven playing field, where factories that follow the law are handicapped. Operating without the threat of government censure, factories take shortcuts to save money and lie about their business to placate international buyers.

Widespread ignorance about the impact of rapid industrialization on health and a common desire among government officials, factory managers and workers to make money quickly have caused a widening epidemic of occupational disease. Pollution is contributing to the deaths of hundreds of thousands of Chinese every year. The high costs the country pays to achieve the China price make sustaining it a high-wire act.

THE FIRST PEOPLE to arrive at the Canton Fair, the massive, biannual trade show that draws so many importers to Guangzhou each year, are the migrant workers. They are the authors of China’s extraordinary growth, the people who build the skyscrapers that dot its city skylines and assemble the shoes that are cheap enough to cause trade wars. The Canton Fair is a showcase of their handiwork.

They turn up just after seven in the morning, two hours before the fair opens, their loose clothing at odds with the crisp glass-and-steel arches of the new convention center. Dragging rusty metal carts, they mill hopefully around the taxi bays. Over the next several hours, the lanes will fill with cars carrying Chinese exhibitors and their foreign customers. The workers, men and women who have come here in search of work from central Henan province, more than 1,000 miles away, wait for exhibitors carrying stacks of corporate pamphlets or product samples. They are hoping for the chance to cart them into the convention center for a fee of $1.31.

Among the workers is a man named Wang. Thirty-nine years old, with thick, dirty nails and tan skin, he wears a brown shirt, black pants and a belt. When he was a child, his parents couldn’t afford to send him to school past junior high. Wang is here to make sure his son gets better odds. He wants his son to attend high school, and, he hopes, college, in Henan. Every renminbi he earns carting goods to the convention center counts toward that goal.

The ladies who sell calculators arrive next. They are dressed to move in jeans and sneakers, courier bags slung over one shoulder. When the first taxis roll up, the calculator ladies glide into action, leaning in through the open doors of the cars as the foreigners count their change. At the Canton Fair, where many are speaking a second language and pennies can make or break a deal, calculators are the common language. Handed back and forth between buyer and seller, the calculator speaks the language of money, which everyone understands. “Hello, Casio!” the girls who sell calculators say in English. “Nice nice, good good!” They fish their wares from their bags and thrust fistfuls of calculators toward the foreigners.

Eventually, the sidewalk outside the convention center fills with other freshly hatched capitalists. Young women offer to print business cards in two hours. Crowds of college kids, some barely able to assemble a sentence in a foreign language, hold hand-lettered signs advertising themselves as interpreters. For every service, there are a dozen or more competitors of similar quality, a miniature replica of the rivalry inside the convention center and across the country every day. Nobody on the pavement seems to mind. This athletic capitalism is the way China works. “There is no development without competition,” says Wang, the worker from Henan hauling goods.

The Canton Fair is China’s oldest trade fair, held since 1957 in China’s historically most important trading hub. For half a century, the world’s businesspeople have been traveling to Guangzhou during the fair to make deals. When China was otherwise closed to the outside world in the 1960s and much of the 1970s, the Canton Fair was its window to foreign trade.

After 1978, when the country began economic reforms that opened China to foreign investment and encouraged international trade, the fair took on greater significance.

Years later, Guangzhou built a sleek new convention center to accommodate more companies. By 2004, the world's appetite for cheap, Chinese-made goods was so great that foreign buyers crashed through security barriers and shoved aside guards to get into the exhibition halls.[29] The Canton Fair, now known officially as the China Import and Export Fair but still almost entirely devoted to exports, is a capitalist carnival, the world's greatest shopping mall.

Thousands of companies offer products with unfamiliar, tongue-twister brand names. Aki screens. Sope televisions. Zhu Que computers. Cuori vacuum cleaners. PanaVoice speakers. Lamo electrical appliances. Horoad parking meters. JAC automobiles. Huida sanitaryware. Ningbo Golden Fish electrical appliances. There are aisles upon aisles of companies offering identical products: countless manufacturers of streetlights, Christmas tree lights, faucets, toilets and showers with electronic panels that connect to your phone. There are rows of companies making door handles, power tools and MP3 players.

Many of these companies will never make it beyond the low-margin business of contract manufacturing for others. But among them, potentially, are the Sonys and Samsungs of tomorrow.

Some companies try to lure customers to their booths with food: a soft ice cream machine maker plies passersby with free cones, a wine fountain maker touts cups of sour red. Others simply distribute brochures and business cards. One salesman at an electronics manufacturer selling copies of Apple and Nokia products introduces his boss, a 26-year-old man who has chosen to call himself Money. He likes money, he says.

Foreign buyers like money, too. They are here to save it. A Swedish construction executive whose company flew a busload of employees to the Canton Fair says he has cut his procurement costs by 20 percent to 60 percent by switching his purchasing of building materials from Sweden to China. An Australian buyer of windows has lowered his costs by 70 percent. An American restaurant executive says he has saved 80 percent to 100 percent, depending on the product, by moving his purchases from the United States to China. “Why are all these foreigners coming to the Canton Fair?” asks Li, another migrant worker hauling goods with Wang. “Because Chinese goods are cheap.”

UNTIL RECENTLY, the debate about the China price has focused on big, abstract concepts: the undervalued currency, the subsidies to industry, the rampant piracy. This is starting to change.

In early 2007, the Food and Drug Administration determined that the addition of the chemical melamine, typically used to make fire-retardant products, to wheat gluten produced in China caused the deaths of pets in the United States. The contamination led to a massive recall of pet food. More than two million birds and hundreds of hogs also ate tainted pet food, sparking fears of a broader contamination of the food supply.

Then, that summer, the *New York Times* traced the deaths of more than 100 people in Panama to a poisonous chemical used in antifreeze, diethylene glycol, intentionally mislabeled as glycerin in China and then mixed into cough syrup in Panama. Taixing Glycerine Factory, which produced the counterfeit chemical, was not certified to sell pharmaceutical ingredients, the paper reported, an assertion China’s foreign ministry later confirmed.[30]

Not long afterward, health authorities around the world warned consumers against using brands of toothpaste made in China that were found to contain diethylene glycol. These warnings were followed in the United States by the recalls of

Chinese-made toys coated with lead paint and warnings about car tires from China that were believed to be unsafe.

China’s contribution to global warming is of growing concern. In the spring and summer seasons, nearly a third of the air over Los Angeles and San Francisco can be linked to Asia. Researchers have found traces of carbon monoxide, ozone and mercury from Asia in Oregon and Washington State, and pollution from Asia is believed to be affecting weather up and down the west coast of North America.[31] This series of revelations has driven home the point that what happens in China doesn’t stay in China. It comes into all of our homes, every day. The sacrifices China makes to stay competitive in manufacturing affect the rest of the world.

IT WOULD BE IMPOSSIBLE to tell the story of all Chinese factories. China contains an entire universe of manufacturing, from large, highly mechanized, Western-owned factories to tiny local workshops. And every industry has particular characteristics: The dynamics of the semiconductor or automotive industry are distinct from those in the garment or toy trade. In a country as big and complex as China, the conditions in factories in Zhejiang province can differ markedly from those in Fujian, which are again different from those in Guangdong. But certain patterns are common across the country.

To keep things simple, I have chosen to focus on the production of consumer goods—clothes, shoes, toys and simple electronics, the things you use every day—in Guangdong province, the first area China opened to international trade after 1978 and the origin of about a third of the country’s exports.

Many of the factories in Guangdong have foreign investors, particularly from Taiwan and Hong Kong. But there are also plants owned by the government, local entrepreneurs and people from around the world. Much of the momentum in Guangdong's economy comes from private and foreign-invested companies.

Guangdong is the most populous province in China, with perhaps 110 million people squeezed into an area slightly smaller than the state of Missouri. Its huge population is partly due to the influx of migrant workers from other provinces.[32] Located on China's southern coast, just across the border from Hong Kong, Guangdong is bisected by the Pearl River. The parts of the province not given over to industry look almost tropical: There are palm and banana trees, beaches and farming plots that seem unchanged for centuries. But dotted around the Pearl River, which has been an artery of trade for centuries, are industrial cities containing hundreds of thousands of factories, many of them specializing in light industry.

These factories range in size from single production lines tucked anonymously into office buildings to multistory tiled fortresses with their own cavernous cafeterias, sushi bars, golf courses, bank ATMs, hospitals, massage parlors, swimming pools and hotels. Many sit behind gates manned by security guards. The factories' names or external appearances rarely give away much about the activity inside, since so much of the work is done for other brands behind a curtain of secrecy.

A few times a day, once before eight in the morning, then again at lunch, and once more around six in the evening, the scale of the work happening behind the gates becomes apparent. During these hours, the roads outside the factories fill with a blur of yellow, blue and green uniforms and the sound of scores of shuffling feet as employees start or finish a shift. They are mostly young Chinese women, often under the age of 25. Between shifts, the girls might eat at a roadside stand or return to the dormitories provided by the factory, where they often sleep 10 or 12 to a room, in bunkbeds, for the duration of their employment. Outside the dormitory windows flutter a thousand pieces of laundry, a tiny hint of the number of people employed in the workshop of the world.

Within Guangdong’s borders are some of the largest factories on earth, including an electronics plant with some 270,000 workers; the world’s largest television maker, making millions of TV sets every year; the largest sofa manufacturer; the largest artificial Christmas tree factory; China’s leading telecommunications equipment makers; and hundreds of thousands of other plants. There are at least 400,000 factories in Guangdong province. In 2006, Guangdong’s gross domestic product was $332.8 billion, and its combined imports and exports totaled $527.2 billion.[33] Based on this data, if Guangdong were a country, its 2006 GDP would have been larger than that of South Africa, Ireland, Argentina or Finland. It would have been on par with that of Norway and slightly smaller than that of Saudi Arabia.[34]

Parts of your computer come from Guangdong. Most likely, so do many of your children’s toys. You own shoes, clothes, furniture and electronics that were assembled there. Guangdong is where China and your life intersect.

Chapter 1

Skip or SKIM this chapter

HOOKED

THE STORY OF CHINA'S emergence as the world's workshop starts with the story of one of its most enthusiastic customers: the United States of America. In the aftermath of World War II, American officials decided that the country's foreign policy interests were best served by helping rebuild the global economy. Policymakers were convinced of the economic and security benefits of free trade, and U.S. businesses wanted markets for their products overseas. Washington poured money into reconstruction of industry in Europe and Japan and encouraged imports to rejuvenate foreign economies through "trade, not aid."

Reversing earlier policies that protected American industry by keeping import tariffs high, postwar officials lowered them. President Truman reassured the public that "American labor can now produce so much more than low-priced foreign labor in a given day's work that our workingmen need no longer fear, as they were justified in fearing in the past, the competition of foreign workers."[1]

Over the following years, the American government continued to promote free trade. By the time China emerged from three decades of relative isolation in 1978, American consumers were accustomed to seeing foreign labels on their shoes, clothing and toys. And American manufacturers were in the habit of fighting back.

Long before there was a China price, there was a Japan price, a Hong Kong price, a Taiwan price and a Mexico price, though they weren't known as such.

Japan was an early beneficiary of America's postwar foreign economic policy. Before the war, Japan had built a powerful textile industry, but it was devastated by American bombing during the war. After World War II, American cotton growers lobbied the U.S. government to rebuild Japan's textile industry so that they would have somewhere to sell their product.[2] The U.S. government helped reconstruct the country's textile mills and in the mid-1950s, the Eisenhower administration slashed tariffs on a variety of items imported from Japan. They were working toward political, not economic goals, Ellen Israel Rosen writes in her book *Making Sweatshops: The Globalization of the U.S. Apparel Industry*: "Neither Truman nor Eisenhower had any interest in providing American consumers with low-cost textile products from Japan. Until the late 1950s the reconstruction of the Japanese textile industry was important primarily to the effort to contain communism and promote the political and economic ties that would link Japan to the Western democracies."[3]

Americans pounced on cheap imports of Japanese-made textiles and clothing in the 1950s. Japan's "one dollar blouse" undercut its American-made competition, which was selling for three to four dollars at the time. Under seige from these and other imports, American textile makers pressured the federal government for protection. In 1957, the United States set a five-year cap on Japanese exports of cotton textiles. By the 1960s, checked by these voluntary restraints and shifting into more sophisticated industries, Japan was losing out to other countries in the manufacture of textiles and clothing.

Its economy rebuilt with help from American aid after successive wars, South Korea was selling long-sleeve dress shirts in the United States for half the price of the same shirt manufactured in the United States in 1972.[4] By the middle of that decade, Hong Kong led the world in the export of clothing.[5] Back at home, American manufacturers continued to take their concerns to Washington, as imports, particularly cars and electronics from Japan, threatened domestic producers.

And yet Asian exports to the United States continued to acclerate. Asian governments put export industries at the core of their postwar development strategies. Hong Kong, Singapore, South Korea and Taiwan, dubbed the “Asian Tigers,” achieved double-digit growth by focusing on exporting to developed countries. Governments in these areas created special districts just for exporters with tax exemptions on imports used in export manufacturing and other incentives for foreign investors, a strategy that China would later copy.

These countries’ lower labor costs made them attractive suppliers to international buyers. In 1975, American apparel workers earned an average of $3.79 an hour, compared with $0.22 in South Korea, $0.29 in Taiwan and $0.75 in Hong Kong.[6] These Asian countries all followed the same pattern: they started at the bottom rungs of the manufacturing ladder with simple products like toys, textiles and apparel, and climbed their way up into electronics, cars and machinery—another model China would quickly replicate.

Liz Claiborne, the women’s clothing brand, was an early buyer from Hong Kong. As Robert Zane, formerly the company’s senior vice president for manufacturing and sourcing, recalls, “Liz and Art [Arthur Ortenberg, Liz Claiborne’s husband] would go to Hong Kong every two to three months, and they would hold court in their suite at the Peninsula Hotel, and they wouldn’t leave until the job was done, which meant that the next season’s work was designed and production was arranged.”[7]

In 1980, domestic manufacturers produced 70 percent of apparel purchased in the United States. A decade later, they were only making half.[8] In 2006, almost 91 percent of the apparel sold in America was imported. The ratio for shoes was even higher, at 99 percent.[9]

At first, buying overseas was simply a way to lower costs. Eventually, as Japanese and Korean companies began creating their own brands of electronics and cars, manufacturing overseas became a way for multinationals in the United States and Europe to level the playing field by producing in the same countries as their new competitors.

Motorola and Fairchild were among the earliest groups to begin assembling transistors in South Korea in the 1960s. Other semiconductor groups looked to Singapore, Malaysia and Thailand for testing and assembly.

By most accounts, the early days of the offshore manufacturing boom were highly profitable. American retailers were willing to pay premiums to businesspeople, both local and foreign, for introductions to good, cheap Asian factories; and the factories, because of their relative scarcity, had leverage with buyers.

Americans were buying more from other regions as well. As it had done in Asia, the U.S. government was looking to extend its vision for economic foreign policy in Latin America. In 1961, President Kennedy announced an initiative called the Alliance for Progress to fight the communist threat from Cuba and spread democracy in Latin America. As part of the Alliance for Progress, the newly created United States Agency for International Development provided financial support for companies looking to invest in the Caribbean. It advised governments in the region on attracting foreign investment and trained managers. The United States even funded programs to train workers there.

In the 1960s, the government introduced rules that allowed manufacturers to produce components in the United States, send them overseas for assembly into a final product and ship them back to America, paying tax on only the value added abroad. Of course, one of the main reasons U.S. garment makers were shifting production overseas was to take advantage of lower labor costs and overhead, which meant that there was little added value to tax. These rules helped hold down costs for American garment manufacturers by allowing them to source overseas more cheaply.

In the 1980s, the Reagan administration helped make sourcing from the Caribbean even cheaper for American garment producers. It gave unlimited quotas to Caribbean countries shipping clothes to the U.S. market, as long as the textiles used in their production were made—and cut—in the United States. Some considered these measures a way to help American industry compete with lower-cost producers in Asia.[10]

Mexico in particular saw the potential in manufacturing for U.S. consumers. In 1964, Mexico's minister of industry and commerce traveled to Asia and saw the manufacturing by foreign companies already under way there. The following year, Mexico created a scheme to allow investors to bring in materials and equipment for assembly duty free as long as the products would be exported. These factories were dubbed *maquiladoras*, from the Spanish term for the amount a farmer pays a miller to grind his corn.[11] The maquiladoras enabled U.S. companies to take advantage of Mexico's lower labor costs and less onerous labor laws. They quickly became a hub of garment and electronics production for the U.S. market.

As the maquiladoras and the Asian Tigers were packing containers to America, China was hardly a blip on international buyers’ radar screens.

FOR THREE DECADES after 1949, when Mao Zedong’s Chinese Communist Party, after a bitter civil war, wrested control of the country from the Nationalists, China was preoccupied by its own domestic struggles.

Mao imagined a strong, self-reliant China, powered by modern industry. Under his guidance, the Communist Party emulated the Soviet Union’s Stalinist model for economic growth, mimicking its emphasis on central planning and heavy industry. He began by asserting government control over the economy, including factories. New ministries were created to guide industrial development and defense. Peasants were coerced into collectives with other households and barred from traveling without permission.

The government also borrowed from its ideological big brother, the Soviet Union, to fund its investment in massive heavy industry projects. It brought in thousands of Soviet advisers and shipped thousands of its engineers off for training in the USSR. Mao instituted a strict ranking system for the workplace. An “iron rice bowl” of benefits was introduced, including housing, health care and a pension.

Initially, at least, the Soviet model seemed to work well. Industrial and agricultural output rose rapidly. But in their focus on meeting targets, managers often overlooked quality. Employees were unmotivated. To make matters worse, to pay for the machines it needed to import to develop heavy industry, China had to export agricultural products, at the expense of domestic consumption.[12] Agricultural output, while rising quickly, wasn’t expanding fast enough.

Mao’s thinking began to shift around the mid-1950s. In order to promote simultaneous growth of industry and agriculture, he concluded, the people needed to mobilize en masse. He envisioned an ideal communist society, where everyone was healthy, communal household facilities allowed women to work more productively in the fields and food and clothing were free.[13] His reforms led to what became known as the Great Leap Forward, an ultimately disastrous set of policies enacted in the late 1950s that caused widespread starvation and the deaths of millions of people. Countryside cooperative farms were merged into communes to lift agricultural output and to aid in the mass mobilization. Bands of peasants worked around the clock to build roads, dikes, lakes and other infrastructure. Under orders to dramatically expand steel production, peasants were pushed to build smelting furnaces in their backyards, stripping their homes of metal in order to feed themselves.

The Great Leap brought chaos, famine and devastation. The backyard furnaces were hopelessly unproductive. Officials routinely inflated grain and industrial output figures to please Mao. Managers abadoned factories, leaving them in the hands of workers. China announced ever higher and more unrealistic grain output targets, and officials continued to lie about achieving them. In hopes of importing more machinery to support heavy industry, China tried to expand its grain exports to the Soviet Union, depriving its own rural residents of even more food.[14] Famine and disease spread through the countryside.

In 1960, relations with the Soviet Union, which had started to get rocky in the mid-1950s, took a nosedive. The USSR withdrew its thousands of technicians from key projects, including oil fields and the country's atomic bomb program.[15]

By the time party officials decided to slow down their targets for the economy in late 1960 and early 1961, 20 million to 30 million people had died. China was in a severe recession, with economic output down by a third.[16]

The Cultural Revolution that began in 1966 set off another tidal wave of upheaval. As part of Mao's campaign, young people, intellectuals, teachers and even party cadres were sent to the countryside to perform manual labor. Newspaper editorials warned that some party members at industrial and mining enterprises were "taking the capitalist road" and called for "struggle" against these people. The chaos was highly disruptive for factories.

Groups of factory employees—often ordinary workers, but also party cadres—seized control of factories, in theory to carry out Mao's command but also to settle personal scores. Often they had support from the notorious Red Guards, the young bands of Mao enthusiasts that terrorized the country during the Cultural Revolution. Technical staff with the wrong attitudes were declared "bourgeois technical authorities," removed from their posts and carted off to the countryside. Workers and party faithful with no management experience or training took the helm at factories.

Because of the confusion in the economy, supplies came unpredictably and managers hoarded whatever goods they could procure. And because output volumes, profits and taxes were set by the plan, factory managers had little incentive or freedom to do better. Industrial production and exports slumped, particularly after relations with the Soviet Union soured. Politics trumped all else. One slogan summed up the tenor of the times: "Management is absolutely not a question of production and business operation. It is a question of the political line."[17]

And yet, even during the dark, isolated days of the Cultural Revolution, China's economy was not completely cut off from the outside world. China had traded mostly with other socialist countries between 1949 and 1960, gradually importing more from market economies starting in the late

1950s as the rift with the Soviet Union deepened. In the 1960s, despite its disdain for Western capitalism, China began to step up its trade with Hong Kong, Japan, Europe and southeast Asia.[18] All trade was conducted through government entities.

Exports were wildly unprofitable. During this period, like other socialist governments, China kept its currency overvalued. Because the government paid producers the same price in renminbi for a product whether it was sold overseas or at home, the overvalued currency often ensured that exports sold at below the cost of production. In 1962, China lost $1.50 for every dollar’s worth of products it exported.[19]

The Canton Fair, which had started in 1957, was China’s window to the world—with a political tint. At the autumn fair of 1967, there were “struggle sessions” against British traders, recalls John Kamm, then a businessman and now an advocate for Chinese political detainees. “Foreigners were totally segregated from the local population and were accompanied everywhere by stiff and formal escorts. On Sundays, the one day of the week the trade fair closed, they signed up for staged visits to kindergartens, factories, communes, and, most dreaded of all, hospitals, where performances of stomach surgery under acupuncture anesthesia were laid on,” he has written.[20]

In the early 1970s, to rebuild its economy from the ravages of the previous decade and shore up its defenses against a feared invasion by the Soviet Union, China began to import more machines and acquire more petrochemical, steel and other plants from overseas. Mao forged links with the outside world again, hosting President Richard Nixon and establishing diplomatic relations with Japan in 1972. Although Mao continued to control China in name, stewardship of the country was passing fitfully by the mid-

1970s to more outward-looking officials. Exports began to tick upward, moving away from the agricultural products common during the Mao years and toward manufactured products, including textiles. Bicycles, watches and sewing machines began to trickle out of China, the first signs of the deluge to come .[21]

IT WAS NOT UNTIL Deng Xiaoping came to power, however, that China turned a corner in its trade with the rest of the world. The son of a landlord from rural Guang'an county in southwestern Sichuan province, Deng spent part of his teenage years in France. When he returned home, he rose through the ranks of the Communist Party. Purged during the Cultural Revolution, Deng was rehabilitated in 1973 as a vice premier. Deng's early approach to the economy was to continue the emphasis on heavy industry, this time through the purchase of equipment from overseas. Officials planned to pay for the shopping spree with oil they hoped to discover, but no oil was to be found.

In 1978, after a political struggle that saw him purged and then rehabilitated once more, Deng pushed aside Mao's successor Hua Guofeng to take control of China. The same year, peasants in the countryside began taking matters into their own hands. Starting in Anhui province, farmers began to abandon the collectives and focus on household production in hopes of staving off further famine and hardship. Government policy condoning decollectivization followed later.

Under Deng's guidance, China devalued the renminbi, and lifted taxes on the parts used to assemble exports. Hoping to replicate the success of market-oriented reforms in the countryside, the government gave managers more power to control production and where they bought materials. Enterprises were allowed to keep some of their profits and given more freedom in hiring, firing and promoting workers.

Change was under way around the country, but Guangdong province changed more quickly than anywhere else. For centuries before the Communist Party came to power, trade had been a way of life along the Pearl River, which curls through the center of the province. Canton, the old name for Guangdong, had been a trading hub as far back as the Song dynasty, which lasted from 960 to 1279 .[22] It had continued in this role, and by the eighteenth century, British and American traders strolled the streets in white linen suits.

In the nineteenth century, the river teemed with trading ships piled high with goods, sampans and traveling opera troupes. In 1889, Guangzhou opened the first modern mint in China, stocked with machinery from Birmingham, England.[23] Guangdong continued to flourish as an industrial base under the Nationalists.

Guangdong provincial party leaders decided to do everything they could to promote economic development without alarming their bosses in Beijing. Central leaders saw value in using the province as a way to attract foreign currency, needed to buy technology and equipment from abroad. Most overseas Chinese were from Guangdong and continued to remit funds back to families there; the province was far enough away from Beijing that any unintended consequences of the experiment in capitalism could be contained; and the party leaders in Guangdong seemed game.[24]

Beijing gave Guangdong more freedom to manage its economy. Instead of having to rely on central planning, the province was allowed set its own prices for locally manufactured exports. Instead of having to send all of its foreign currency earnings from trade with foreign countries to the central government, Guangdong could keep most of these profits for itself. The province was also given more freedom to set wages and prices than other areas.[25] Between 1978 and 1980, Guangdong received more than $200 million in foreign investment, some of it flowing directly into factories.[26]

Guangdong also became the staging ground for the Communist Party’s first experiment with capitalism. In 1978, Deng named four “special export zones.” Three were in Guangdong—Zhuhai, Shantou and Shenzhen—and one in Xiamen, in Fujian province. They were subsequently upgraded to “special economic zones,” or SEZs, perhaps to illustrate the government’s greater hopes for their potential. Shenzhen was the first SEZ to be officially established, in May 1980.

China’s SEZs offered a package of incentives to foreign investors: lower corporate tax rates, exemptions on import duties for parts and material used in export processing and exemptions on export taxes. Hopes for the SEZs ran high. They were intended to serve as a kind of Venus flytrap for technology and investment. They were supposed to encourage reunification with Taiwan, Macau and Hong Kong. And they were to serve as incubators for capitalism.

But at first, the zones were deeply controversial. The SEZs reminded some officials of the humiliations of the “treaty ports” that China had been forced to open to foreigners after the Opium War in the 1840s. Worse, Shenzhen struggled at first to attract investment on the scale that party leaders had hoped.

It was hardly an easy place for foreign investors to work. Local officials sprang additional fees on investors after deals were signed. Labor productivity was low. The transport system was undeveloped and inefficient. Bureaucratic procedures and interference in joint ventures were legion.

Investors had a list of other concerns. How much freedom would they have to repatriate their earnings on the mainland? How easy would it be to find workers and fire them if necessary? How reliable were the Chinese in upholding contracts? What kind of patent protection was there?[27] While some investors, particularly from Hong Kong, did not wait for answers to these questions, many did.

Chinese officials were disappointed, too. By the end of 1984, the SEZs' exports were growing more slowly than the rest of the economy. Foreign investors weren't bringing in all the foreign technology the Chinese had been hoping for. Foreigners were, however, investing in property and tourism, hardly what the planners in Beijing had envisioned.

International buyers also questioned China's potential. A 1986 article in *BusinessWeek* recounted how buyers were upset about poor quality, long lead times and high material costs in China. The piece warned that "many of those most in the know about the China trade—buyers for major U.S. department stores—doubt whether the Chinese will ever be as successful exporters as the Taiwanese and the South Koreans. 'China is walking at a snail's pace, while the rest of the world is galloping,' says one American buyer in Hong Kong. 'They're not catching up.' "[28]

But such fears proved misplaced. Investment from Hong Kong and Taiwan was on the rise. Workers were flooding into Guangdong: By one estimate, there were as many as ten applicants for every job in the late 1980s. In 1987, David Wilson, Hong Kong's governor, noted that there were already at least one million workers in Guangdong province processing goods for Hong Kong companies, more than the British colony's whole manufacturing workforce. Xinhua, the Chinese state-run news agency that served as the mainland's de facto embassy in Hong Kong, called Wilson to say that no, in fact, two million people in Guangdong were doing this type of work.[29]

Quietly, China's factories were taking their place in the global economy. In 1980, Frank Lo, a Hong Kong businessman who had been making underwear and other simple consumer goods since the 1960s, had opened a factory near Foshan in Guangdong province and another in the northern city of Dalian to take advantage of China's lower labor costs. In the first year of operation, Lo's 2,000 employees churned out 14 million bras. He shipped 12 million to America, prompting the United States to create a quota for Chinese-made brassieres. Top Form International, Lo's company, began accumulating market share in the United States and Japan.[30] Top Form is today the world's largest contract bra manufacturer.

One Shenzhen factory stuffed, stitched and assembled dresses for many of Coleco Industries' pudgy-faced Cabbage Patch dolls that flew off the shelves in the United States in the 1980s.[31] Another churned out Sony Trinitron color TVs, most destined for the Chinese domestic market. Sony also relied on a joint venture in Xiamen to make its videotape recorders in the early 1980s.[32] Cheap TV sets made by Hong Kong companies nobody had ever heard of were starting to roll out of Guangdong province into Europe. Philips and Matsushita Electric Industrial, better known as Panasonic, were investing in TV tube factories in China.[33]

"The Chinese market share is shooting up so fast, and they're selling at such low prices, that the situation is becoming intolerable, " *BusinessWeek* quoted Jean Caillot, an executive at Thomson, the French TV maker, as saying in 1988.[34] Thomson tolerated the situation for 15 years, until it formed a joint venture with Chinese rival TCL in 2003.

China's manufactured exports began to increase in the late 1980s, rising from 49.5 percent in 1985 to 81.8 percent of total exports by 1993, growing nearly 24 percent per year.[35] Exports of toys, sporting goods, shoes, textiles and apparel accounted for much of this growth, though shipments of electrical equipment like televisions, telephones and home appliances also expanded sharply during this time.[36] In 1988, a Taiwanese businessman named Terry Gou opened a computer components factory in Shenzhen to expand capacity and lower costs. Gou promoted his factory to U.S. and Japanese buyers and acquired a large piece of land. Today, Gou's company, Hon Hai Precision Industry, employs 450,000 people across China and counts Apple, Motorola, Dell and Hewlett-Packard among its customers.[37]

The same year, Yue Yuen, a shoe manufacturer owned by the Tsai family of Taiwan, set up a plant in Zhuhai, in coastal Guangdong. Yue Yuen expanded into nearby Dongguan and Zhongshan and is today the world's largest manufacturer of shoes.

By 1992, when Deng Xiaoping traveled to Guangdong to reinforce his economic reforms on what became known as his Southern Tour, the United States accounted for nearly a third of China's exports, up from only a few percent in 1978.[38] Wal-Mart started buying products from China in 1993.

A mutual dependency was forming. China depended on money from overseas, in the form of either direct investment or orders into its factories. And the rest of the world was developing a taste for cheap Chinese products. In the wake of Deng's visit, local governments in China began vying for foreign investment.

A brazen commercial culture was taking root in southern China, one that was beyond the control, and no doubt the expectations, of the sober mandarins in Beijing who had authorized the creation of the SEZs. Shenzhen, the first and largest of the zones, was by the mid-1980s becoming an oasis of decadence in socialist China, a capitalist playground replete with nightclubs, massage parlors, gambling halls and all manner of illicit financial dealings.

In 1986, the city played host to the National Hercules Cup International Bodybuilding Tournament, including—for the first time in China—Chinese women in bikinis.[39] In 1993, at the height of a stock market boom, a restaurant in the former fishing town hosted a banquet including lobster from Japan, salmon from Norway, turtle, shark's fin and extra-large abalone, at a cost, in today's dollars, of more than $130,000. The banquet was so extravagant that it earned a reprimand from the National People's Congress, China's legislature .[40] Shenzhen's reputation as a wild, lawless Chinese boomtown was sealed.

Chapter 2

THE FIVE-STAR FACTORY

FOR THE CROWDS OF international buyers that flock to Guangzhou each year, the Canton Fair is just the beginning of the journey. Having found factory managers who promised to deliver, the buyers fan out across the country, installing themselves in hotels for several days of visits. One of these hotels is the Shangri-La in Shenzhen, just across the border from Hong Kong. Its lobby fills up early most mornings with buyers, Western men and women in suits, polo shirts and khakis. They wheel their black carry-on luggage behind them, their expressions slack and fogged by jet lag.

The buyers stand beneath the crystal chandelier, making calls on their cell phones to pass the time, squinting through the hazy sunshine at the driveway outside. The murmured talk among them is of shipments to California, the Chicago market and joint venture agreements. Within two hours' drive of this lobby are tens of thousands of factories, filled with millions of workers.

As nine o'clock approaches, the Shangri-La's driveway begins to attract minivans and buses, their dashboards displaying cards printed with the household names of global commerce: Wal-Mart Stores, Hasbro, Sears. The crowd in the lobby swells with well-heeled Chinese men and women, translators and business partners. Gradually, the lobby empties into the vans, which turn onto Shennan Boulevard, the main artery in Shenzhen that runs out toward the factories.

On a bright morning in 2006, a Wal-Mart executive sat quietly in a sedan crawling along Shennan Boulevard. She was on her way to visit a factory that made goods sold in Wal-Mart. Her job was to determine whether the factory was producing according to Wal-Mart's ethical standards—which include a strict ban on child or slave labor and rules on occupational hazards, working hours and payment of the minimum wage. The Wal-Mart executive's visit represented two contrary forces pulling on global supply chains in labor-intensive products today: the demand from consumers and companies for goods at a cheap price, and the fear of news leaking out about the unsavory way they may have been made. Wal-Mart was inspecting the factory to make sure it wasn't a sweatshop.

About an hour later, the car pulled up next to a nondescript industrial building, indistinguishable from countless others in China: Covered in chipped, dirty tiles, with a sad family of plants by the entrance, the factory wasted little on appearances. A manager showed the Wal-Mart inspector to a conference room lined with a glass display case filled with the factory's products.

The inspector asked the manager to retrieve payroll and other records and to choose 15 assembly-line workers she could interview later that morning. "Do it as fast as you can," she said. "I have to finish by one P.M. at the latest." Clipboard in hand, the auditor briskly toured the factory, peering over employees' shoulders and asking them about their work, scrutinizing fire extinguishers and a first aid box. She inspected the factory warehouse. She squinted at quality control records on display at the line supervisor's office.

The factory managers watched her warily, afraid of what she might find. At the end of her tour, she pronounced the factory "pretty good." Relieved, the managers treated her to a Cantonese lunch—steamed fish, rice, soup and vegetables crowded onto a lazy Susan—at a nearby restaurant. The auditor left early to inspect another factory.

A ten-minute drive away from the restaurant, another factory owned by the same manager was humming with activity. This factory was making the same products for Wal-Mart as the factory the auditor saw, but under wholly different conditions and a cloak of secrecy. Tucked away in a gated business park, the factory is not registered with the Chinese government. Its 500 employees work on a single floor, without safety equipment or insurance and in excess of the legal working hours. They are paid a daily rather than a monthly wage. No one from Wal-Mart has ever seen this factory, though Wal-Mart buys much of the factory's output, according to its owner. Officially, this factory does not even exist.

IN THE PIE OF PROFITS made by selling things to people, the manufacturer often gets the smallest slice. Depending on the product, manufacturers can make as little as a few percent or even less. Retailers or brands often take the largest piece, marking up the goods anywhere between two and ten times—or more—between the time they leave the factory and when they hit the shelves. "We have a theory," says Bruce Rockowitz, president of the trading arm of Li & Fung, which manages logistics and manufacturing in China and around the world for big international companies. "It's called the soft three dollars. And basically if something is manufactured in China at a dollar, it then retails at four dollars, in that range.

"What I think Americans don't really appreciate is that a big portion of the value that is developed by manufacturing in China is not left with China. It's left with the people that manufacture the brands, the retailer and the consumer. And the actual factories, they don't make that much money," he says. "The profit that a factory will make in China is very low."

Part of the reason for this is that China's arrival as a mass producer of consumer goods coincided with a dramatic shift in manufacturing processes. Although Western companies have been outsourcing manufacturing overseas for decades, only relatively recently has technology allowed the production of a wide variety of goods to be divided into tiny, standardized steps that could be performed by multiple companies in disparate countries, thereby dividing by three, four or even more the profits to be made from manufacturing.

To make a shirt, a factory in South Korea might supply the yarn, a plant in Taiwan might do the weaving and dyeing and a factory in Thailand might do the actual cutting and sewing.[1] A laptop sold in the United States might contain a graphics chip designed in Canada and made in Taiwan, a hard drive from Japan and a liquid crystal display screen produced in South Korea.[2] Or these factories could all be located within one Chinese province. This so-called modularization of production has made it possible for Chinese factories to specialize and become incredibly competitive in the production of one component of a global supply chain.[3] It has helped turn products that once appeared to be sophisticated luxuries— mobile phones, DVD players, flat-screen TVs—into more affordable commodities.

This shift has also made it easier for companies that control the supply chains—often the Western brands and retailers—to speed up the production process. In industries such as toys, manufacturers are introducing new models faster to take advantage of rapidly changing technology or to stimulate consumer demand. Stephen Dixon, regional director for greater China at consultancy Kurt Salmon Associates, says the apparel industry is moving away from fixed seasons like spring and autumn and toward the model pioneered by Inditex, owner of the apparel retailer Zara. At

Zara, Dixon says, “there is no clear definition of seasonal variation. They have a continuous flow of merchandise to the stores with an ever-changing variation to the products in the store.” It takes Zara only three weeks to dream up a garment, produce it and get it into stores.[4] The treadmill of global capitalism is accelerating, increasing the pressure on manufacturers to produce goods quickly and, in some cases, in smaller quantities.

Modularization of manufacturing has also allowed brands and retailers to switch between suppliers at will. In many light consumer industries, the most salient trend is the lack of loyalty in relationships between buyers and factories. Especially since the advent of the so-called big box retailers —the discount chains housed in giant, boxlike buildings— buyers have been looking to save money wherever they can.

This relentless competition for lower prices has bred what Jim Straus, an Illinois-based businessman who has been connecting Western buyers with Chinese factories for more than a decade, calls “the race to zero.” These chains base their business model on providing goods at affordable prices. Shoppers expect continual price declines, so the retailers, and the middlemen that supply them, demand continual price declines from their suppliers. If one factory can’t provide that, they find another that can. Retailers come to believe that this process can continue indefinitely. “The mindset of the big box retailers is the race to zero, because they can’t get any more for their product,” Straus says, noting that the trend is particularly striking in electronics. “There’s no loyalty. They’ll eat you up for a nickel. They’ll eat you up for a penny.”

Despite these pressures, there is no shortage of people in China willing to sign up for a contract to produce for big international brands. The promise of the annual volume of shipments involved in supplying to the U.S. or European market provides a powerful incentive to entrepreneurs. And when a product is a hit, contract manufacturers do a booming trade. Some pocket healthy profits.

The world's largest contract manufacturers have found a way to make this competitive pressure work for them. They capitalize on the outsourcing trend by partnering with brands in electronics, apparel and shoes to do more than just assemble products for their customers. They also advise on design and strategy. At the top of the pyramid in the electronics industry are giant contract manufacturers like Flextronics, which makes Microsoft's Xbox game console, and Foxconn, part of Taiwan's Hon Hai Precision Industry.

The garment and shoemaking industries also have their own thoroughbred specialists, many of them descendants of Hong Kong's and Taiwan's booming export trade in the 1970s. Hong Kong-based companies like the Esquel Group, Luen Thai and TAL make clothes for big international brands according to Western management philosophies and with sophisticated technology. But they have diversified beyond traditional manufacturing into research, design and inventory management for customers. Esquel even grows its own cotton in Xinjiang province in northwestern China. Pou Chen, a Taiwanese company, works with the world's leading shoe brands. Its Hong Kong-listed Yue Yuen subsidiary is the world's largest athletic shoe manufacturer and is expanding into retail.

Many Chinese factories are smaller, shakier institutions. The commodification of manufacturing and the Chinese government's emphasis on economic growth have made it easier to gain a foot-hold in the global supply chain. One European electronics buyer in Shenzhen describes a common archetype for the factory managers he deals with: "Three years before, he was in construction. He was the cheapest factory in his industry, but he didn't know if he was losing money or making money. He stays in business for two to three years," he says. "Anybody can open a factory here."

One Hong Kong businessman brags that with the right connections, he can throw together an assembly line in as little as two weeks. Sometimes, foreign importers or brands supply the tools, the expensive metal molds used in making plastic parts; component or material suppliers provide lines of credit to be repaid (in theory, at least) when the goods are exported. There are consultants in China who will build you a factory, buy your materials, and hire your workforce and management team. All you have to do is wire money.

Foreign investors enjoy greater privileges. In the name of promoting economic growth, local governments will go out of their way—even violating their own laws—to help them. Officials will set aside land, build factories and find workers. They will slash taxes, offer rent-free periods and waive fees. They might even overlook regulations on product quality and health.[5] "Although Chinese law does provide certain preferential treatments to foreign investors, particularly in relation to tax exemptions and reductions," reads an international law firm's newsletter, "it can be the case that incentives offered by local authorities are unlawful."[6]

Partly as a result of these factors, there is fierce competition in the production of many simple consumer products. Log on to Alibaba.com, a leading Web site that connects buyers with factories in China, and type in any item. A search for "lamp" finds more than 5,800 companies making every kind of lamp you could want. More than 5,500 will make you an MP3 player. More than 11,000 companies produce T-shirts. Check back in six months and these numbers will have risen. "Why is it so tough to do business in China?" asks Charle Chen, manager of Zhongshan First Mountain Electrical Appliance, a giant electronic sign factory in the southern city of Zhongshan. "Because you don't have one or two competitors, you have 100 or 200." In the summer of 2005, Andy Rothman, China macro strategist at brokerage CLSA, surveyed 30 owners of small and medium-sized private manufacturing enterprises. Of those he interviewed, 37 percent said they had more than 200 domestic competitors.[7]

In a market like this, buyers often hold all the cards. And they play them well. The largest buyers can demand annual and sometimes even quarterly price cuts from their suppliers. "As things get more competitive, the pressure that comes along with that, yeah, we try to take advantage of it," Gary Meyers, a vice president in global procurement at Wal-Mart, told the *Wall Street Journal* in 2003. The piece dubbed China's export manufacturing sector "survival of the cheapest."[8]

Many export manufacturers in China live order to order, buffeted by vacillating commodity prices and jockeying against aggressive competitors. Rivals copy each others' advances and, once competition erodes profit margins in one product, move herdlike into producing something else. Overcrowding in many product categories is good for buyers, who have more factories to choose from, but hard on manufacturers, who have to endure paper-thin margins.

This kind of pressure can lead factory managers to desperate decisions. Managers, many of whom have little or no management training and sometimes no more than a high school education, often accept orders without considering whether they have the capacity to fulfill them.

One consultant who works with Chinese factories says: "They don't have any strategies. It's seat of the pants, day by day, they survive by some mistake, by some stroke of luck they get by another day and then the next day they get up and do it all again."

China’s history of political upheaval and its current business environment, where policies can change overnight, intensify manufacturers’ short-term perspective. Some factory managers maintain they operate in the narrow space where the whim of their customers, the favor of local officials and the will of the migrant workforce overlap. A shift in any one of these elements can pitch the business into turmoil.

American toddlers happen not to respond well to a cartoon created to promote a new toy. Hundreds of workers at the factory in Huizhou, Guangdong province, chosen to produce that toy lose their jobs when the order is canceled. An importer in the Middle East falls on hard times and defaults on a payment to a towel factory in central China? The towel factory’s young manager takes out another loan, forcing his wife’s family deeper into debt.

EUGENE CHAN, the owner of the factory the Wal-Mart auditor visited, grew up in Hong Kong when that city was one of the world’s great offshore manufacturing centers. Then a British colony, Hong Kong was so overrun with new arrivals from mainland China in the 1950s and 1960s that many families squatted in hillside shanty-towns until the government built public housing estates. Factories farmed out work to local families, and a generation of children grew up assembling plastic flowers, toy motors and jeans on the floors of their apartments after school. Chan, who insisted that his name and that of his business partner be changed to protect his business, was one of those children. Every afternoon at three o’clock, a truck would arrive at his housing estate and deposit in the lobby a pile of products that needed assembling. His mother would snap up the family’s share and parcel it out to the children.

That experience gives him a different perspective on factory management from that of the Western companies he started supplying 15 years ago. Then, beating employees was a standard management strategy at factories like Chan’s. “This was normal,” Chan says. Managers dashed out to eat dinner before dark because all the local restaurants closed at five. The same managers slept at their desks, and when they didn’t, they slept in wooden buildings nearby. The factories were their lives.

Several years ago, Chan decided to pitch for a contract to supply Wal-Mart. He knew he was in for a challenge. As we will see in greater detail later, Wal-Mart and other big multinationals began requiring their suppliers to comply with a code of conduct for ethical standards in the 1990s. While codes vary by company, they all contain requirements that suppliers limit working hours, install safety equipment and pay their workers at least the legal minimum wage. And they require suppliers to follow the local labor law. All of these conditions have to be met before a factory will be approved as a supplier. To Chan, the most problematic element of the code of conduct was working hours. He doubted whether he could meet Wal-Mart’s delivery deadlines and still follow China’s restrictive rules on working hours.

Postreform China didn’t have a labor law until 1994. Since it came into effect the following year, the law has mandated an average 44-hour workweek, with no more than 36 hours of overtime per month. The standard working day lasts eight hours. Under the labor law, employees are guaranteed one day off a week and at least four national holidays. If a company in China needs its employees to work longer than the standard workweek, it should by law first negotiate with the workers or union. In practice, it can negotiate for a waiver from the local government. Overtime pay on weekdays is one and a half times the regular wage; on rest days it is twice the regular wage; on Sundays and public holidays, it is three times. Employees are to work no longer than three hours of overtime a day.

By comparison, under America's Fair Labor Standards Act, employees who work more than 40 hours in a workweek are entitled to overtime compensation of at least one and a half times the regular wage for any hours beyond that. Although there are some exceptions for certain kinds of workers, there is no cap on the total hours employees over the age of 16 can work. Nor do employers have to pay overtime for work on the weekends, public holidays or rest days, unless the hours worked during those days push the employee over the 40-hour workweek.[9]

China's labor law was created in the midst of an outbreak of worker unrest as the country moved toward a market economy under Deng Xiaoping. After Deng's 1992 Southern Tour, when he asserted his determination to proceed with market reforms, debate began on a labor law to reflect the new structure of the economy. Part of a broader shift toward improving the rule of law, the labor legislation was intended to reassure foreign investors that China was a stable, well-regulated place to put their money. Chinese officials examined labor laws from other countries, mainly those in Europe.

Auret van Heerden, a former International Labor Organization official who is now president of the Fair Labor Association, a multistakeholder group that monitors working conditions, says Chinese officials had hoped the labor law would address the gap that had emerged between the market economy and the old socialist laws, but even after the legislation came into effect, "nobody knew how to use it. You had a whole load of practitioners—labor bureau officials, trade union officials—whose mind was still stuck in the state-owned economy suddenly expected to manage a market economy and they just couldn't do it."[10]

Chan was fairly sure that if he followed Chinese labor law, he wouldn't stay in business long. "Customers believe they are reasonable but to us the price is not reasonable," Philip Lam, Chan's business partner, said later. "So we have to think of other ways to make our profits reasonable."[11]

Chan's employees are migrants from rural villages who, he told me, consider the legal minimum wage inadequate and prefer to work longer hours to increase their salaries. We were sitting in the factory's conference room, a spartan space dominated by a large table and shelves displaying the factory's products; it was a few months after the Wal-Mart auditor had visited. "The basic trouble is the worker wants to earn more in a short time," Chan told me. "If any factory has overtime in some area, all the workers will go to it. Workers like overtime. They tell me, 'I haven't come here for a holiday. I'm here to earn money.' If you don't have overtime, they will leave."

Chan asked for help from friends who ran their own factories. They explained how they coped with the divergent demands of their workers and customers: They made one set of time cards for Wal-Mart and kept the real ones elsewhere. They coached their workers to give Wal-Mart the answers it wanted to hear. And they set up factories on the side, factories Wal-Mart never saw but that made its products anyway. In essence, they subcontracted.

Chan followed their example. Every night, two of the factory's office employees stayed late to stamp time cards with clock-on and clock-off times that matched Wal-Mart's standards. Real and fake cards were locked away in separate locations to avoid confusion. One manager created forged payroll documents on the office computer to match the fake time cards. Another invited trusted workers to the office for a "party" after work each week and explained how they would be expected to respond to auditors' questions. Underage or uninsured workers were given days off during announced audits. For extra security, new hires were not allowed to work extra overtime, in case they were spies from labor advocacy groups.[12]

The ruse of the falsified records worked beautifully. The workers recited their lines convincingly enough. The time cards exuded authenticity. Wal-Mart never uncovered sufficient evidence to prove that the factory was lying. Chan and Lam suspect that Wal-Mart knew the records were forged and the workers were coached but chose to ignore these facts, although they have no evidence to support this claim. “They need cheap products,” Lam said. “If they are not doing it like this—open one eye, close one eye—they can’t have cheap products.”

“If every factory needs to reach the legal standard, the costs of production will not be that low,” he added. “So most factories will have two factories: One is for demonstration, one is for actual production. ” They are certain the Chinese government is similarly aware of the trade-off behind the China price. Beijing, Chan told me, “only sets a very beautiful number for working hours to show the world. The government already knows everyone cheats, even themselves.”

BUT THE FORGERY MADE Chan uneasy. He worried about being caught, which would have consequences for his relationship with Wal-Mart. Even if the workers were well trained, “how can you prove that they will say the right things?” Chan thought. And yet he knew his competitors were working in excess of the legal working hours and still managing to pass the code-of-conduct audits. If eight out of 10 factories followed the rules and two didn’t, you might as well not have rules, he thought.

So he switched to a new strategy. Quietly, even as he was masterminding the document forgery at the old factory, Chan cut a deal with a powerful local entrepreneur to rent a floor in an industrial building in a nearby business park. He ordered simple equipment and recruited workers willing to work for longer than the maximum legal working hours, without insurance or labor contracts. Because the factory wasn't registered with any authority, it wasn't bound by any cumbersome rules on health and safety and it didn't have to pay taxes. Very few records were kept. Chan made sure the factory, which isn't listed on his business card, stayed a secret from Wal-Mart and the vendors he contracted with to sell to the U.S. retailer.

Chan decided to keep the first factory operating as it was, but to run it strictly according to Wal-Mart rules: no more fake time cards, no more coaching workers. Instead, he would farm out more work to his second factory. Everything Wal-Mart saw would be real; it just wouldn't represent the whole picture. In China, they call them "five-star factories"—as good as a five-star hotel. Sometimes they're known as "model" or "demonstration" factories. Their unregistered cousins are "black" or "shadow" factories. But shadow factories are ultimately subcontractors. As America outsources to Chinese factories in pursuit of cheaper prices, Chinese factories outsource to other Chinese factories for the same reason.

Paul Midler, president of China Advantage, an outsourcing and supply chain management company, says subcontracting is a common practice in China, often without the knowledge of the customer. One auditor who has been monitoring factories in China for over a decade estimates 99 percent of factories have a "shadow" to help them meet retailers' demands.

Chan shifted 40 percent of his production to the shadow factory, recruiting 500 migrants to work there. Staff who wanted to work the legal hours remained at the five-star factory. "This factory is for the lazy workers," Chan says. Employees in the shadow factory earn about $165 a month for working 11- or 12-hour days, seven days a week, while the “lazy” workers at the five-star plant take home at least \$127 for eight- to 10-hour days, six days a week. “Seven days a week, every day overtime for four hours, they will be happy,” is how Chan describes workers at the shadow plant. Employees at the five-star factory are paid by the month; at the black factory, wages are paid daily.

The workers asked to be paid by the day, Chan says, and even accept a lesser wage in exchange for the privilege. Getting the unregistered workers their money that regularly is a hassle. Every morning, a driver who doubles as a bodyguard brings the manager to the bank, where he withdraws enough cash to pay the second factory’s workforce. Still, it’s worth the trouble: Chan reckons the shadow factory is 20 percent to 30 percent more productive than the five-star plant because of its longer working hours. He has started outsourcing 20 percent of his production to a third factory and plans to invest in a fourth—both are shadow factories.

“I must make our factory stronger,” he says. “Without these other factories, we wouldn’t have a chance.” More than half of Chan’s production capacity is now off the books, off the Chinese government’s radar screen and out of sight of Wal-Mart.

SUBCONTRACTING LIKE THIS is a common practice in manufacturing around the world, often for good reasons. It frees factories to focus on what they do best, outsourcing the operations where they are least efficient. It can cut costs and accelerate production. But unless buyers of the goods monitor their suppliers’ subcontractors, the practice also means that customers have no guarantee where or how their product is made. A subcontractor could be substituting cheaper parts or materials, adding unapproved chemicals or skipping safety features. “You can’t control for quality that you can’t see,” says Midler, the outsourcing executive.

"Anything you're trying to monitor, you can't monitor if the product is being made somewhere else."

But for Chan these issues are beside the point. Subcontracting to a shadow factory simply allows him to tap one of China's most important resources over the past few decades: laborers who work long and hard.

Good official data on the hours Chinese manufacturing employees spend on the line is difficult, if not impossible, to get. Judith Banister, a consultant with Javelin Investments in Beijing who also works for the Conference Board, a business research group, has made her own estimates based on publicly available information. Using the results of a government study, she found that during two weeks in 2002 manufacturing workers in cities worked an average of 45.4 hours per week.[13] Manufacturing workers in so-called town and village enterprises, which are companies introduced in the 1970s that are collectively owned by or closely associated with rural communities, worked on average 50 hours a week.[14] As Banister concedes, these numbers may well underestimate the hours worked in Chinese factories, particularly in export plants on the coasts.

Some Chinese factory workers regularly log 360 hours or even 400 hours in one month, according to the ethical trading consultancy Impactt. That's a 12- or 13-hour day, an 80- or 90-hour week. With no days off. Under Chinese law, workers should not be on the job more than 204 hours a month, including overtime.[15] By comparison, the average American manufacturing workweek in the United States was 41.1 hours in the fourth quarter of 2006.[16]

Excessive overtime is not an exclusive vice of Chinese factories, nor of sweatshops producing for big retailers. It stretches across the supply chain. But in China, it is extremely common. Of the 142 Chinese factories Amherstbased nongovernmental organization Verité surveyed for international brands between 2002 and 2003, 133—an overwhelming 93 percent—were working longer than legal limits. Of those 133 plants, the largest percentage were working more than 100 hours of overtime a month.[17] During the busiest months in Pearl River Delta factories, working days can stretch to 18 hours or even longer. More than half of the workers Verité interviewed said they wanted to work overtime to earn more money. Nearly three quarters said they considered this extra work “important, ” “very important” or "essential.”[18]

“It’s an incongruous law,” says one Western factory owner in China of the labor law’s overtime restrictions. “Because you know they are asking people to work eight hours and they all say what do I do with the extra four or five hours? Sit on my bum? That’s their logic.”[19]

Factory managers believe there is no other way to meet customers’ demands. Buyers often introduce essential design changes late in the production process without extending the production deadline, forcing their suppliers into overdrive. Or they drag their feet in approving the final product specifications. Buyers and factories often misunderstand each other. Materials are late in arriving at the factory. In the absence of vigorous enforcement of the labor law by the Chinese government, each of these factors contributes to widespread violation of working hour requirements.

So, too, does a shortage of managers who understand the importance of knowing how to manage people. Says Auret van Heerden of the FLA: “I think even today the major problem is that in the labor field, you’ve just got so few people who have an understanding of human resource development, human resource management or labor relations. The mentality of those managers that we were meeting in 1996 is the same as the mentality of the manager you're meeting in 2006."[20]

For all the extra hours they are working, Chinese employees are not always adequately compensated. A survey by the Guangdong trade union found that 35 percent of workers were not paid proper overtime wages, and this surely understates the problem .[21] In interviews with workers in the southern city of Dongguan in 2004 and 2005, Hong Kong NGO China Labor Bulletin found that "managers basically regarded the payment of overtime as an internal matter to be decided on by the factory, and not as a statutory right of the workers. Indeed, many of them seemed to award overtime pay as a kind of 'discretionary bonus' entirely untied to the actual number of overtime hours worked."[22]

Nor is overtime always optional. China Labor Bulletin found that many managers set production quotas so high that they were impossible to meet during a regular working day. Employees were not paid for the overtime they worked in order to meet the targets. What overtime they were paid for constituted a significant portion of their earnings: some 30 percent to 50 percent, according to CLB.[23]

As anyone who has ever pulled an all-nighter can attest, all this overtime can't be good for workers' output. The longer the hours, the higher the risk of accidents. Productivity also declines during long overtime work. And even if managers are not paying the full overtime wage, having workers on the line for longer costs money. Half of managers surveyed by Verité for its overtime report admitted that while they worked overtime to meet production deadlines, they were losing money by working overtime. Sixty percent admitted productivity declined during excessive overtime.[24] In *China Blue,* a documentary by filmmaker Micha Peled about a jeans factory in southern China, workers try to hold their eyes open with clothespins during long shifts.

Yet for many factory managers, the case for illegally long overtime is much more persuasive than that for working within legal limits. With so many competitors and so much pressure from buyers on price, factories cannot afford to miss a shipment deadline. Their livelihood depends on it.

CHAN'S FIVE-STAR FACTORY is not somewhere you would want to stay overnight. There are footprints on the walls. It's poorly lit, with low ceilings and slippery floors. Like most factories in southern China, only the offices are air conditioned. If that was five-star, I wanted to see what one-star looked like.

Though they often sit just down the road from their five-star brethren, China's shadow factories are generally off limits to most foreign visitors. Most buyers, auditors, government officials and journalists see only the model factories. It took time, then, to convince Chan to take me to one of his shadow factories. He insisted on one condition: Allowing a foreign woman onto the production line was too risky; I had to be content with a drive-by. So one sticky summer afternoon, we left the model factory and drove for about ten minutes, passing tired-looking, tiled factories with thirsty palm trees out front, a few restaurants and new apartment buildings.

The car slowed and we turned into a narrow road blocked by a metal gate manned by a guard. The first tall commercial building had reflective windows and looked, like many in the area, entirely empty. Chinese cities are filled with mystery buildings like these, thrown up in a froth of real estate development, their intended or actual uses unclear. We drove past that building and pulled into a narrow paved area behind it in a valley between two industrial buildings tall enough to block the sunlight.

Workers streamed past us, headed back on shift. Chan, visibly nervous, got out of the car and pointed out the lack of fire extinguishers—except for one fire hydrant outside the building—and the stairs, which had been broken but were recently fixed.

Chan had told me that if I asked his employees at this factory where they worked, they would tell me they were unemployed to protect the factory's anonymity. If government inspectors arrived, employees would shut the door to the factory to keep them out. Chan didn't like to come here, he said, because it made him uncomfortable. He preferred to have his local managers deal with this factory. "You like to eat chicken, but you don't want to see how the chicken was killed," he said, hurrying me back into the car.

WAL-MART EXECUTIVES acknowledge that they are aware of the practice of subcontracting. Rajan Kamalanathan, vice president for ethical standards, says the retailer asks all suppliers to declare any other factories they will be using to complete the order so that those factories can be audited to the same standards.

When presented with Chan's argument that he can't stay in business and make a decent profit and follow Wal-Mart's code of conduct, Beth Keck, director of international corporate affairs, objects. "There's no bones about it, we're tough negotiators," she says. "It's very clear that we see ourselves as the advocate for the consumer in bringing the consumer the best value possible. But a business, a supplier, a factory that's doing business with us, it's by their choice. If they see terms that they can't meet, then they have a responsibility to not take the order. They've got a choice there."

In spite of his chicanery, Chan's business is not getting any more profitable. Skyrocketing oil prices and rising demand from other manufacturers in China's booming economy have driven up material costs, which account for

60 percent to 70 percent of the total production bill. Power shortages two to three days a week have forced Chan to buy his own generator, which can double his electricity costs. At the same time, the government is raising the minimum wage quickly.

Worker turnover continues to increase, as employees at Chan's model factory leave for better pay elsewhere. He is losing 20 percent to 30 percent of his workforce every month. "If your factory has too many holidays, they will go to another factory without holiday," he says. Not all of his former employees stay in industry, however. Since almost all of his employees are women, some leave for entertainment, others for the ever-booming business of prostitution. That's why "you don't find a beautiful girl on the production line."

To encourage workers to stay longer, Chan has been holding barbecues for his staff at the five-star factory and taking them to the beach—tactics he calls "updated management." But he admits he can't compete with the benefits larger factories are offering, their movie nights showing pirated DVDs and their karaoke rooms. He has resorted to paying his staff $39 for every new worker they bring in. And he is spending hundreds of thousands of dollars on machinery to replace his workers and relieve the headache of high turnover. Employees have to pass Wal-Mart's audits for working hours and pay, but machines don't, he says. Plus, machines make visiting customers think he's "very high-tech."

For now, Chan's company has hundreds of competitors. He believes some of them routinely lower their prices below the cost of production to win business. He also suspects mainland Chinese businessmen are moving into his sector with government help: One new competitor who is undercutting him on price drives a car with license plates from the People's Liberation Army, China's military. His concerns are difficult to verify. Chan says his gross profit margins, a healthy 20 percent five years ago, are 10 percent to 15 percent and falling.

Recently, local officials appear to have decided to turn the area where his factory is located into a luxury property district; a high-rise apartment building is already under construction nearby. “The local government wants the factories to leave and all of them build beautiful apartments or business centers, just like Hong Kong a few years ago,” he says.

Having watched his rent rise 10 percent to 20 percent annually for the past three years, Chan has been looking to move his first factory. For months, he traveled to cities in the Chinese interior. Officials in these areas courted him, he says, “like a man dates a girl,” promising a ready supply of workers, good power supply, the flexibility to work around the clock. Just as he was about to settle on one city in northern Guangdong province, a rainstorm flooded local factories. The officials had failed to mention, over the *mao-tai* liquor and stuffed pig, that they were living in a flood plain. Chan put the search on hold.

And through this, Chan is spending more than $19,000 a year to be audited by Wal-Mart and his other customers. Many multinationals have started charging their supplier factories for audits, particularly if previous inspections have uncovered code violations. For factories like Chan’s that must pass dozens of audits a year, these inspections are a substantial, resented business expense.

Like other Chinese factory owners, Chan fervently believes that the code of conduct and compliance programs are a conspiracy, a ploy by America to make China less competitive. He suspects, incorrectly, that factories in other countries do not have to undergo audits. “In other countries, they don’t have this. This is because the government, they don’t want China to be the only [country supplying America], so they give you a lot of trouble.”

Chan feels he is making the best of a difficult situation: Caught between the demands of his workers and the demands of his customers, he is just trying to survive. Chan says his employees and customers leave him no other choice. “If you need . . . to be competitive with other factories, you must follow the rules of the game. First is the workers, second is the game of overseas orders.

“The biggest problem, I think, is the culture of the Chinese. Everyone wants to earn more and then go back home,” he says. Everyone, including Chan. His margins may be falling, but his profits from the factory are still enough to buy luxury cars and trips around the region.

Just as he worked after school as a child to earn money for his family, migrant workers actually want to work beyond the law’s limits. “This is a very, very deep culture. All Chinese people want more money because it’s the culture . . . the workers like to work and earn money because they don’t want to stay here very long. After a few years, they’d like to go home and have a very small business.”

This desire is part of China’s competitive advantage, he explains. “Why haven’t the factories gone to Africa?” he asked me one day. “Because only Chinese work like this. In Thailand, Malaysia, the workers are lazy. And in Africa.” His uncle had been to a factory in Africa, he said, and the workers there only worked four hours a day and slept the rest of the time. “Because the history of China has always been civil war, people think saving money will make them safer.”

Chan reckons he is like everyone else in China: just trying to survive. Going behind his customers’ backs to subcontract work to sweatshops is just part of doing business. “Everyone knows that everyone cheats,” he says. “Everyone knows this is only the rules of the game.”

Chapter 3

THE PHYSICAL COST

EVERY MORNING for a decade, Deng Wenping awoke at dawn and crept out of bed for a run. When he returned, his wife would have a bowl of watery rice porridge waiting. One rainy morning in the summer of 2000, Deng arrived home from his jog exhausted, having wheezed and puffed his way through his daily ritual. “That’s because you’ve gotten so fat,” joked his wife, Tang Manzhen.

Deng’s waistline had been expanding along with the couple’s fortunes over the last few years. As the pair’s savings from the Guangdong jewelry factory where they both worked rose, Deng, always a good eater, had ballooned to a plump 190 pounds. Here near China’s southern coast, more than 1,400 miles from their hometown in western Sichuan province, Tang and Deng were living the Chinese migrant worker’s dream: buying a home in their rural hometown, sending their children to school in new clothes, saving for the future. Life had never been better. They grabbed their factory badges and reported for work.

Today, Tang traces her despair back to that morning, when the first crack appeared in their handmade portrait of prosperity. Within six months, Deng was diagnosed with silicosis, an incurable lung disease he contracted grinding semiprecious stones, and was out of a job.

As Deng’s health deteriorated, the pair drained their life savings and fell deeply into debt fighting their former boss for fair compensation. They spent days in government agencies and lawyers’ offices and courtrooms before their case won a hearing. Then, months after a judge ordered his former employer to pay him almost $30,000, Deng died. He was 36.

Dotted across the Chinese landscape are “cancer villages,” towns full of widows whose late husbands worked in the same toxic industries, enclaves where women give birth to babies with deformed limbs and other disabilities. Eastern Jiangxi province’s Shangshan village was once renowned for its gold mines. Today the village is heavily in debt caring for hundreds of farmers who contracted silicosis working in the mines.[1] Some of these “widow towns” owe their fate to environmental pollution; others to a common workplace.

More than 200 million Chinese workers in 16 million companies are exposed to dangerous working conditions.[2] As of the end of 2005, China had recorded 665,043 total cases of occupational illness; of these, 606,891, or about 90 percent, were pneumoconiosis, an umbrella term for a group of debilitating lung diseases. The most common of these are “black lung,” common among coal miners, and silicosis, the illness that claimed Deng Wenping’s life.[3] The actual incidence is probably much higher: Yi Jintai, head of the public health school at Shanghai Medical University, has put the number of pneumoconiosis victims at more than one million.[4]

In a sign of the seriousness of the problem, Beijing has become increasingly frank about the long-term effects of the country’s rapid industrial growth on public health. “In the past few years, people ignored work safety amid fast economic growth,” Su Zhi, deputy director of the Ministry of Health’s law enforcement and supervision department, said in 2004. “But vocational disease cases will increase in the coming years. . . . The troubles planted in the past will be exposed in the coming few years.”[5] The *Workers’ Daily,* a

Chinese newspaper, has warned that pneumoconiosis will be the most serious social problem in rural China by 2010.[6] One official claims that the spread of pneumoconiosis is sparking popular protests.[7]

One effect of this emerging epidemic is a wave of litigation from workers who fell ill as a result of their jobs. A growing number of Chinese workers are responding to government calls to make use of the legal system by taking their employers to court. Surprisingly enough, the workers are winning.

ON A BRIGHT JANUARY morning, Deng’s widow, Tang Manzhen, and a friend buy paper and firecrackers at a corner store in Xujia, a poor, remote town set in the terraced hills of Sichuan province. They set off into a muddy field, their sneakered feet deftly navigating around sticky holes and puddles. For forty minutes, they weave their way deeper into the countryside, around glassy rice paddies and lazy water buffalo, past golden rapeseed fields and one-story brick houses. There are no roads here. A local official hit residents up for money to build one, but the money vanished and the road never materialized.

At a small, grassy slope overlooking a clump of trees and rice fields, the women stop. Deng’s tomb sits here, a large red and white structure painted with traditional Chinese funeral wishes: “Your story will be everlasting,” reads one. “This man’s children and grand-children will be prosperous,” reads another.

Tang and her friend set fire to the paper they bought and ignite the firecrackers, snapping echoes through the valley to honor Deng. It’s almost a year since he passed away. “You should be pleased,” Tang says aloud to her late husband’s tomb. “A lot of people have come to see you today.”

Tang and Deng were born and raised in these hills. Tang's family ran out of money to pay for her schooling before she learned to read well. Still teenagers when their marriage was arranged, they moved into Tang's gray brick family home and continued to farm, as generations had done before them in fertile Sichuan. There was no running water, no electricity. The toilet was a hole in the ground in the corner of the pig shed. So it was with great hope that Deng set out at 21 to find work in the booming coastal province of Guangdong: hope for money and a better future.

Millions of other hungry farmers had the same idea, though, and as they poured out of the countryside into the coastal cities in the early 1990s, factory work was hard to get without a personal introduction. Deng worked his way up from planting trees to a factory job. By the mid-1990s, he was earning $25, sometimes $40 a month and was father to two children he rarely saw. Tang decided to leave the kids with relatives and join her husband. Deng had found her a job at Perfect Gem & Pearl, a small jewelry factory where he had been working since 1997 in the dusty city of Huizhou, near the border with Hong Kong. They would be processing artificial and semiprecious stones including quartz, onyx, aventurine and carnelian used in costume jewelry and ornaments for export.

The products may have been pretty, but there was nothing glamorous about the work. Tang remembers nearly 12-hour days, seven-day weeks and sealed windows that held in the dusty air. In jewelry factories in the area, it was common for workers to be fined for forgetting their factory badge, or taking a day off, or washing their hands minutes before their shift finished. Factories regularly required deposits worth half a month's or a month's wages from new workers. In the gem drilling section at Perfect Gem, Tang says she earned at most $2.50 to $4.00 a day, or about

$100 a month. Deng, a more experienced worker, took home closer to $200.

Tang recalls how government labor inspectors would warn her boss before they came. “They would clean everything up until it sparkled,” she said. The government officials “would never know there was anything wrong.” Not all jewelry factories in China are like this, but some are.

Perfect Gem & Pearl has since ceased doing business under that name. Company executives say the company changed its name to Perfect Silver Jewelry in 2005 and stopped processing gems. The company now focuses on the manufacture of silver jewelry. Where the products that Deng and Tang made were sold is still unclear.

Company executives at a Hong Kong jewelry fair were reluctant to discuss their customers. “You mean exactly where we sell the goods? Exactly the place?” Aaron Long, a salesman for Perfect Silver, responded when I asked where his goods were sold. “I don’t remember exactly.” He turned to his colleague, and in Chinese repeated my question and said that he wasn’t supposed to tell me.

Tony Lee, his colleague, offered that the company’s products were sold in the United States and South America. He suggested I speak to the company’s wholesaler, Decal Jewelry. A man named Alpha Chi from Decal told me that when the company was still processing gems he sold their unfinished goods to bead stores, catalogs and other wholesalers. Most of what the factory made was unfinished goods; it also made some finished products, which Chi initially told me were sold at chain stores including JCPenney and Wal-Mart. Later, in an e-mail, Chi insisted that he only sold to other wholesalers in New York, and that he never dealt with retailers.

When I contacted JCPenney, the retailer denied that it had ever done business with the company. Wal-Mart said it had “no record of our suppliers having used the factory in question. As you know, whenever these situations come to light, we quickly investigate.”

Such inconsistency is not surprising. Unlike the gold and diamond industries, where large companies are the norm, smaller businesses are common in the gem sector. Gemstones also come from disparate countries. “The colored gem supply chain is probably the most complex and difficult to monitor,” says Peggy Jo Donahue, director of public affairs at Jewelers of America, the national jewelry retailers’ association.

What is clear is that China is a major jewelry and gemstone manufacturer, and its products are increasingly attractive to international buyers. China exported $6.87 billion worth of jewelry to other countries in 2006, a 25 percent increase from the year before. In terms of volume, jewelry accounts for only a small portion of American imports from China, but shipments are growing quickly. In 2006, the United States imported $1.65 billion worth of jewelry, including watches and rings, from China, a 45 percent increase since 2002, according to U.S. Census data. Imports of gemstones were up 51 percent over the same period to $1.16 billion. But the fastest-growing category of imports was gem diamonds, which have risen 91 percent since 2002, to $77.16 million in 2006. “As China has done in other industries, it has a transforming effect on jewelry and how and where it’s produced,” Donahue says. Guangdong province, where Tang and Deng worked, is the country’s largest jewelry production base.

After months of trying to contact the company to discuss Deng’s case, I received a letter from a lawyer at a Chinese law firm known as Guangdong Province Lichen Law Firm that said it had represented Perfect Gem. The letter stated that Perfect Gem provided health checks for its employees before they started working at the plant and conducted annual health checks. It said the factory had provided "relatively complete" dust-removing equipment and facilities, trained its workers in safety procedures and bought injury insurance and contributed to pensions on behalf of all of its employees. The Chinese Center for Disease Control and Prevention had "failed to identify the employees' potential health problems in a timely manner due to a lack of professional staff and equipment." The lawyer's letter also noted that Deng had worked for seven years at other jewelry plants before he started work at Perfect Gem and had kept his case history a secret. Tang says that while her late husband did work at other jewelry factories before Perfect Gem, earlier medical examinations did not uncover any evidence of the disease. Given the poor quality of medical check-ups at many Chinese factories, it's hard to say for sure whether Deng contracted silicosis before he started working at Perfect Gem.

Tang recounts that weeks and months at Perfect Gem sped by so quickly that she and Deng forgot their own birthdays. All their savings went back to Sichuan, into a house and new clothes at Chinese New Year for their children.

But then Deng came home breathless from his run that rainy summer morning. In the following weeks, the man who never caught colds came down with a deep and persistent cough. A local doctor diagnosed him with tuberculosis. Incredulous, Deng sneaked away from the factory one day and traveled to the provincial capital, Guangzhou. It was there, at the province's occupational disease hospital, that he learned what his work had done to his lungs.

That night, Deng was too overwhelmed at first to tell his wife what he had heard at the hospital. One of the world's oldest occupational illnesses, silicosis is caused by the inhalation of crystalline silica dust produced by the grinding, crushing, drilling or breaking of rocks, sand, concrete and certain ores. Inhaled in great quantities, silica dust causes inflammation and scarring in the lungs, which continues even after exposure has stopped. The severity of the disease depends on the intensity and length of a person's exposure. In later stages, silicosis can lead to lung cancer, tuberculosis and heart disease. It has no cure.

Deng's silicosis was already at an advanced stage. He was told he had five, maybe 10 years to live. The next day, Tang says, he returned to work. Factory policy was to deduct three days' wages for every day missed without management's approval, a pay cut he could hardly afford.

The idea that working in dusty areas could be harmful to your lungs was a health problem among miners and workers in other dust-producing trades in the UK and South Africa in the nineteenth century. It became a national issue in the United States during the Depression, when workers began to sue their employers for silicosis-related liability.[8] The deaths of hundreds of laborers as a result of exposure to silica dust while building a tunnel in Gauley Bridge, West Virginia, for Union Carbide in the mid-1930s caused a public outcry.[9]

Silicosis is preventable. Good ventilation, safety equipment and the isolation of operations that generate silica dust can all help reduce the risk of exposure. Developed countries have put programs in place to prevent silicosis in the workplace.

And yet the disease persists as a public health issue around the world. Personal injury lawyers in the United States have targeted silicosis as a potential source of workers' compensation claims. A rise in silica-related litigation has fueled discussion of the illness as "the next asbestos," a reference to the huge number of lawsuits filed by people who suffered from exposure to the fibrous mineral asbestos, used in insulation and fireproofing since the

1960s. While the number of Americans dying from silicosis is falling, there were still 187 deaths from the disease reported as recently as 1999.[10] Germany was reporting 3,500 cases a year as recently as the 1990s. Japan records 1,000 cases annually. There are some 600,000 former miners in South Africa with the disease.[11]

China has recognized silicosis as an occupational disease since the 1950s. As far back as 1956, the government issued regulations to limit dust exposure in industry. It apparently achieved some success in controlling the disease, although figures from this tumultuous period of Chinese history are particularly suspicious because of frequent misreporting for political purposes. The average age of patients being diagnosed with silicosis reportedly rose from 35 in the 1950s to 51 in the 1980s, which suggested that patients were being exposed to less intense amounts of silica dust.[12] In the late 1980s, the number of new cases reported each year had apparently started to decline.[13]

But any improvements were temporary, if not illusory. From the illegal coal mines in the north to the jewelry factories in the south, the China price has multiplied the threats to workers' health. Today, according to official statistics, China records about 10,000 new cases of pneumoconiosis, the umbrella term that includes silicosis, every year. About 5,000 people die from silicosis annually, although the actual figure is no doubt much higher.[14] And the victims are getting younger. The average age of diagnosis has slipped to 40, and patients as young as 20.[15] China Labor Bulletin, a Hong Kong NGO that published a report on silicosis among jewelry workers, calls the disease an epidemic.[16]

Deng had never heard of silicosis, much less how to prevent it. His education came directly from the doctors who diagnosed him.

After several of Deng’s colleagues, suffering similar symptoms, visited the same Guangzhou hospital, authorities there sent a team to Perfect Gem to examine the staff, Tang recalls. Six male employees, including Deng, were immediately hospitalized. When they were released almost a month later, the factory offered Deng employment doing light work, Perfect Gem’s law firm said in its letter. Tang remembers it differently: She says the newly discharged workers were not welcome back at the factory and were told they would be compensated and dismissed. Deng would get almost $13,000.

While it is difficult to know for sure what was or wasn’t offered to Deng and the other workers in terms of “light work” after they were released from the hospital, one thing is clear: It wasn’t enough to satisfy Deng. His life, sacrificed over dusty machines, was worth more than that. He wasn’t going down without a fight.

CHINA’S MILLIONS of migrant workers are very vulnerable to occupational disease. Some 90 percent of victims of occupational disease in China are believed to be migrants.[17] Migrant workers tend to take the most dangerous, dirty, exhausting jobs—those least likely to adhere to national laws for health and safety. Many lack labor contracts to formalize their relationship with a factory. They often live in cramped, unsanitary conditions—prime breeding grounds for infectious disease.

Even in relatively good factories’ dormitories, many workers in southern China’s industrial cities sleep 12 to a room and share one bathroom. Sometimes there is only one bathroom per floor, a damp open room with squat toilets and showers and sinks. The stench is so bad workers limit their visits. Housing outside the factory gates can be even worse: piles of trash in the stairwells, filthy shared kitchens, communal toilets that are rarely cleaned. Dirty, crowded living conditions like these are thought to be the reason tuberculosis, cholera, smallpox and other diseases spread so quickly through the cities during England’s Industrial Revolution.

Migrants’ working conditions also make them susceptible to injury and illness. Most export factories pay by the piece. An employee’s speed determines her salary, and in turn the amount she sends home to needy relatives. Safety equipment is a hindrance, a drag on productivity, to people working under that kind of pressure.

To compound the problem, many migrants are unaware of the risks they face on the job, often because their bosses fail to warn them. Under Chinese law, companies in industries with a high risk of occupational illness are required to provide medical exams for their workers and keep records of their health before, during and after employment. But factories often skip all of this. Former workers from Deng’s factory claim that employees in the stone-cutting and polishing division had no such examinations, though the company, through its lawyer, denies this.[18] Those factories that do provide exams don’t always allow staff to see their results, though there is no evidence that this was the case at Perfect Gem.

To illustrate the problem, Auret van Heerden, president of the Fair Labor Association, describes a hypothetical case of a woman working in a factory where the production process exposes her to carcinogens that might not lead to cancer for 20 years. Former workers who subsequently fell ill have long ago left the factory. “So we come in and say, you know, you’ve got to wear the mask. Nobody explains to her why she must wear the mask. If they do, probably they don’t explain it in terms she can understand, and within a week or two, she's forgotten all that. Because in her day-to-day experience, nothing seems to merit, nothing seems to warrant those precautions."[19]

China has a law on the prevention and treatment of occupational disease that came into effect in 2002. Responsibility for inspecting Chinese workplaces is dispersed across various government bodies. Very roughly speaking, the Ministry of Labor and Social Security is responsible for enforcing labor law, and so it is concerned primarily with labor contracts, hours of work, wages and social insurance. The State Administration of Work Safety, also known as SAWS, is in charge of making sure Chinese workplaces are safe. Among the Ministry of Health's tasks is identifying potential workplace health risks. Enforcement, however, is left to local governments. There are simply not enough people to monitor the factories where migrants work. The country had only 22,000 full-time labor inspectors as of the end of 2006, overseeing the workplaces of some 764 million employees—one inspector for every 34,727 workers. Government regulations mandate one inspector for every 8,000 workers. Shenzhen, home to thousands of factories and 5.8 million employees by official count, had only 136 inspectors as of the end of 2005.

One former Chinese government labor inspector recalls that he and three colleagues were expected to supervise about 500 companies. They were so busy investigating complaints that the inspectors had little time to proactively inspect factories; to reduce their workload, they hired external contractors. Some of these contractors were ethically challenged. "These guys, because they're not very formal government officials, cause lots of corruption cases," says the former inspector. "People pay money, then they close their eyes ."[20] Given the scale of corruption reported among officials in China, it is safe to assume that the government's internal inspectors were accepting bribes as well.

Bureaucratic procedures can also lengthen the amount of time it takes for inspectors to reach a factory. Drew Thompson, director of China studies and the Starr Senior Fellow at Washington, D.C., think tank the Nixon Center, says that the devolution of responsibility for enforcement to local officials adds layers of bureaucracy in a government where most employees still insist on faxes rather than e-mails. If a Ministry of Health official were to observe a health violation at a factory near the ministry's offices in Beijing, he says, "they wouldn't normally send their inspector into that factory. They have to send a letter to the Beijing municipal government" requesting an inspection. The Beijing government then sends a letter to the municipal health bureau and the municipal health bureau sends a letter to the district health bureau.

China also has a shortage of people who have the technical qualifications to examine workplaces for occupational hazards. Compounding the problem is the state social insurance system, which fails to cover many migrant workers. Private insurance is still relatively new to China and does not cover a substantial portion of the population. While the figures vary, every statistic paints the same picture: Only a minority of migrant workers has any formal protection from the consequences of health hazards on the job.

One in five migrant workers has medical and injury insurance, according to one Hong Kong NGO that works on occupational health and safety issues. According to another study, 21.6 percent of migrants had medical coverage, 31.8 percent had employment injury insurance and 10.3 percent had unemployment insurance.[21] A study by the

International Institute for Labor Studies, part of the International Labor Organization, concluded that only 10 percent of migrants have medical insurance .[22] An even smaller number have pensions.[23]

Under China's labor law, workers are entitled to social insurance benefits to cover maternity care, unemployment, occupational illness or work-related injury, general illness or retirement. Typically, a factory manager buys a package of social welfare benefits on behalf of the employee, who also makes contributions to the scheme. The package of benefits includes unemployment, medical insurance, pension, work injury and maternity care.[24] These benefits cost money. Under reforms introduced in 1997, employers must contribute about 20 percent of their wage bill to the pension and employees must part with 8 percent of their wages. Unsurprisingly, to save money, some managers skip insurance entirely for some or all of their workers. Government officials in heavily industrialized areas often allow factories to purchase insurance for some but not all workers, according to factory auditors. Recently, under pressure from foreign buyers, some factories have started to buy private insurance for their employees. Some will only buy accident insurance, however, which does not cover occupational illness.

Some migrants volunteer not to be covered by insurance. China's social insurance benefits are not reliably portable across provincial boundaries. Some workers, fearing they will not be able to recoup their social insurance contributions in other provinces, don't bother paying into the scheme. Local governments around the country are trying to improve migrant workers' access to pensions, but the rules are still complex. Under the current system, workers are required to contribute to their pension for at least 15 years before they become eligible for benefits. For some workers, that prospect is too distant, and their family's financial needs too urgent, to pay into a pension.

Another reason migrants are denied social services is the *hukou* system, China's 1950s-era household registration scheme. Every Chinese person is required to register with the police for a *hukou,* which logs him or her as part of a household unit in a certain place. One's *hukou* is either rural or urban, and for decades, that distinction has determined that level of benefits received: Urban *hukou* holders got more.[25] Although reforms have relaxed the *hukou* system in some cities, migrant workers commonly hold rural *hukou,* which officially bars them from accessing many state-subsidized public services in the cities where they work. As a result, many migrants pay out of pocket for health care and their children's education.

Left out of the formal health care system, living as temporary or undocumented immigrants in their own country, unaware of the risks they may face and unprotected by insurance, China's migrant workers are on their own when illness strikes.

AFTER HIS DISAGREEMENT with the factory, Deng began looking for a lawyer. He had heard from fellow patients in the hospital that he might have a case.

Before China's labor law came into force in 1995, there were no formal procedures for resolving labor disputes. The law established a set of procedures for workers to redress grievances with their employers, and suddenly it became clear that Chinese workers were no longer as docile as they had once seemed. Labor disputes have risen an average of 24 percent every year since 1996, according to official data.

At the vanguard of this wave of litigation was Zhou Litai, a tall, gregarious man with a military flattop and round belly. In the late 1990s, Zhou, a self-taught lawyer from Sichuan who once worked in a brick factory, represented the family of a couple killed by a delivery truck at the factory where they worked, winning them more than $40,000 in damages. The case set a new standard for awards for victims of accidents of this kind. Zhou became one of the first lawyers to specialize in workers' rights in postreform China.

Zhou set up shop in Longgang, a booming industrial district in Shenzhen. Zhou would take workers' cases for a contingency fee. He was part of a new phenomenon in China: the American-style personal injury lawyer. But Zhou added a local twist. He rented a building where his clients could live as their cases traveled through the legal system. Word about his work spread by rumor and through the media. Since 1997, he claims that his offices in Shenzhen and Chongqing have represented workers in more than 7,000 cases.

The day we met at his Shenzhen office, Zhou greeted me at the front desk and showed me to a room in the back. As we spoke, Zhou interrupted every few minutes to shout orders through an open window at a colleague next door or to greet another visitor. Men filtered in and out of the office, delivering business cards, tea and documents. The phone rang constantly.

Zhou's practice helped make litigation an option for migrant laborers. "The biggest effect of the cases we have handled is that we have raised awareness of the issue in the Chinese government and among workers," he told me. "Shenzhen's worker rights issues are now national issues."

He also helped raise the value of lost lives and limbs in southern China's industrial cities. Standard compensation in Shenzhen for a hand lost on the job used to be about $3,900, he said. Now, it's between $25,000 and $38,000. Zhou's success also paved the way for a new breed of Chinese lawyer, the ambulance chaser.

His services were not universally appreciated. In 2002, officials in Shenzhen effectively ran Zhou out of town by accusing him of practicing in the city without a license. Zhou believes government officials felt he was hurting the local investment environment by defending workers' rights. "They hated me," he says. Zhou also sparked a national debate when he sued a former client who didn't pay his bill. Zhou claims that more than 500 clients have disappeared without paying, and that he has lost almost $800,000 in potential income as a result. Some of these deadbeats, he believes, were encouraged by the local government. Others, he says, "were not so honest."

Originally, it was the Chinese government that drove workers into the courts. In the mid-1980s, Beijing began a campaign to familiarize citizens with the law. Strengthening the rule of law enhances the government's legitimacy, in the eyes of both its public and the world, and provides the formal channel for complaints necessary in a market economy. In official documents, the government encouraged the public to "use law as a weapon." China's state-controlled media picked up on the slogan, covering cases filed by ordinary people, usually in a positive light. Zhou's cases often made the news, according him celebrity status.

Press coverage also raised people's awareness—and hope—for justice through the legal system. Mary Gallagher, an assistant professor of political science at the University of Michigan who specializes in Chinese law and politics, surveyed four Chinese cities and found that people's willingness to go to court was directly linked to their level of media exposure.

IN JANUARY 2001, Tang says, she and Deng were fired without compensation. To pay the rent on a new apartment, the couple borrowed from friends and family. Tang picked through trash heaps. As he petitioned local authorities for assistance, Deng fasted during the day to save money on food. The pair was getting desperate. One labor official from whom Deng sought help threatened to beat him up. Deng consulted a lawyer and concluded he had no choice but to accept the factory's offer. It was a fateful decision: A Chinese judge would later argue that Deng's acceptance of these funds freed the factory from further responsibility.

Perfect Gem's lawyer says that in April 2001, Deng and the company reached a mediation agreement through the local county labor bureau whereby Perfect Gem would pay Deng $9,200- $10,500 to cover his medical fees, disability compensation and pension. In addition, the company volunteered to pay another $4,600 for "other fees . . . not requested by law." Only then, the lawyer says, was the labor contract between them formally terminated.

Tang remembers that weeks passed after Deng agreed to accept the money, but Deng still hadn't received anything. He was furious. Deng tried calling the factory's general manager, but Tang says he refused to take his calls. He even considered bombing the factory. One day, Tang recalls, Deng dialed the general manager's number and identified himself as Liu, the name, he knew, of a Perfect Gem customer. He was asked to hold.

When Deng identified himself, the general manager told Deng he'd look into it. Nothing came of this promise, though, until Deng agreed to give another manager at the factory a cut if he would help, Tang recalls. This bribe whittled the payout to about $11,000, a sum too modest to cover both the medical bills and his family's needs. Deng would have to keep fighting.

Shortly after Tang and Deng moved into their new apartment, it was burglarized. Fortunately, they had stashed their evidence— Deng's factory identity card and health and attendance documentation—at a friend's home. For the next four years, as they made the rounds of the legal system, Tang and Deng guarded their documents closely. At first, Tang followed Deng to court, carrying his evidence in a 16-pound bag. As his health worsened, Deng became too weak to walk, bathe or even dress himself. Tang began to carry him to court on her back, his oxygen supply by her side. The evidence traveled in a backpack fastened across her chest.

Fighting a labor case in China takes time, energy and financial resources. At the time Deng decided to contest the labor bureau's decision, labor disputes in China were resolved in three stages: mediation with the company; arbitration by a local committee composed of representatives from the local union, labor bureau and employers' organization; and litigation. Workers could skip the first stage. But arbitration has traditionally been mandatory. Since then, the government has tried to streamline the process to make it easier for workers to file suit. In August 2006, China's Supreme Court issued a judicial interpretation that allowed employees to go straight to court without submitting to arbitration or mediation if they had pay slips from their employer. It has also lowered the court fees for filing a labor lawsuit to just over one dollar.

In part because of the historical weakness of the All-China Federation of Trade Unions in representing workers' interests, there is ample opportunity for collusion between companies and the arbitration committee to push away labor disputes. The fact that the committees are administered by the government makes them more vulnerable to official interference.[26] The process is expensive, and arbitration committees, which are often understaffed, have not been allowed to rule on personal injury compensation. Nor have their judgments been legally binding. A growing number of Chinese workers appeal arbitration decisions in court.

The government is also trying to improve the mediation and arbitration process to make it easier for workers to get the compensation they deserve. In August 2007, the Standing Committee of the National People’s Congress began considering draft legislation that would make more arbitration decisions, including those related to job-related injuries and compensation, legally binding. The law would also make it easier for workers to file suit if their request for arbitration was declined.

In 2002, after a year of doctor’s examinations and futile attempts to earn money selling phone services, Deng applied for arbitration. The committee rejected his application on the grounds that he had waited too long. China’s labor law has required that requests for arbitration be made within 60 days of a labor dispute, a detail many workers have never heard of. Over the next three years, Deng filed suit against the company twice. Both times, the lawsuit was dismissed. His appeals were also rejected.

For Deng, as for many others, the weapon of the law had jammed. By 2005, Deng had sold the home he and Tang had worked so many months and years to build. He was sicker than ever, in and out of the hospital. Friends and family would visit his bedside to ask him for the money he had borrowed, anxious that he would die before they were repaid. When he could no longer afford treatment, the hospital declared him recovered and kicked him out.

DENG’S CASE WAS IN some ways unusual. Most cases involving migrant workers’ claims against their employers never make it to court in China. Most migrants are too poor to afford legal representation, too poorly educated to navigate the labyrinthine regulations of the legal system, too scared to challenge authority. They are no match for their wealthier, better-connected bosses and local officials hoping to attract foreign investment by limiting labor disputes. Factory bosses often persuade officials that there was “no working relationship” between their company and an aggrieved worker. Or they move the factory to another town or city and set up shop under a different name, complicating workers’ attempts to file suit against them. Cases drag on for years, beyond migrant workers’ ability to afford legal advice.

Many judges avoid labor cases, says Fu Hualing, director of the University of Hong Kong’s Centre for Comparative and Public Law. A labor-related case is “political, it’s quite sensitive, especially if large groups file suit together,” Dr. Fu says. “Normally migrant workers are not represented, they don’t have lawyers. The judges have to help them a lot.”[27]

One of the reasons judges in small cities dislike labor cases is because the litigation fees are so low. Litigation fees in China are set by the Supreme Court and vary by the type of case. Courts depend on litigation fees as a source of income, which in turn determines a portion of judges’ salaries. Because the fees for labor cases are set intentionally low—just over one dollar in most provinces—judges shy away from them in favor of more lucrative cases. [28]

As a result, the cases involving migrant workers that make it to court are generally based on the most incontrovertible evidence. While weak enforcement of the law contributes to the high rate of workplace injury and illness, Chinese laws on occupational health and safety are actually clear and strict. The country has a fairly comprehensive set of occupational health and safety standards introduced since economic reforms began. It has a law on preventing occupational diseases and regulations on preventing and treating pneumoconiosis, on diagnosing occupational disease and workplace injury and on work-related injury insurance. “If you have evidence that the factory has not complied with the laws and regulations, and you have a law on the books saying that this is illegal, then it's very hard for a judge to ignore," says Robin Munro, research director at China Labor Bulletin, the Hong Kong NGO that published the report on silicosis.[29]

Between 1986 and 1990, workers won less than 40 percent of labor disputes. By 1997, they were winning more than half, according to Professor Gallagher. Between 1995 and 2001, in the city of Ningbo in eastern Zhejiang province, a rapidly industrializing area, and Zhongshan in Guangdong, workers won over 90 percent of their cases.[30] Fittingly for a nominally communist country, Chinese guidelines dictate that judges should favor the worker in labor disputes, because workers are considered the weaker party.

IN THE SUMMER OF 2005, Deng got a lucky break. China Labor Bulletin and other Hong Kong NGOs learned of his case and organized protests outside the offices of Perfect Gem and other jewelry companies where workers had contracted silicosis. Tang and the daughter Deng had left behind in Sichuan when he went out to work so many years ago were there.

Shortly afterward, a member of the Guangdong Provincial People's Congress, the local legislature, ordered the court to review its decisions on Deng's case. The court found it had erred and ordered Perfect Gem to pay Deng about $30,000, now a common award for a silicosis victim in China. Compensation awards for silicosis range between $26,000 and almost $40,000, according to a lawyer who works with these cases.[31]

Perfect Gem's lawyer contends that Deng asked friends to appeal to higher authorities for assistance, initiated demonstrations overseas, distributed leaflets and threatened the company's leaders, and that Deng and the other workers "adopted some unreasonable words and actions that were in conflict with the law." Perfect Gem agreed to pay the money on the condition that Deng stop threatening the company and organizing protests and “to demonstrate its understanding for and its cooperation with the government as well as its consideration for humanitarianism,” the lawyer wrote. He maintained that Perfect Gem had followed the government’s orders despite the “extreme words and actions adopted by Deng Wenping and other workers”—unlike other jewelry companies that simply disappeared after they encountered similar problems. “As an attorney,” he concluded, “I would like to express my admiration for Perfect Gem and its owner!”

Tang and Deng returned to Xujia to repay their creditors. They moved in with Deng’s sister, a wiry woman with a big smile, in a four-story house built with money from her husband’s career as an itinerant construction worker. Every day, Tang would take Deng to the local hospital, sometimes by hired motorcycle but more often by herself, hoisting her husband onto her back and carrying him down the town’s main street. Silicosis had ravished his body. Deng weighed half what he had five years earlier.

“I would put him down, rest for a while, then pick him up again,” Tang remembered as she walked down the same street a year after Deng’s death. Xujia is a quiet town populated mostly by young children and the elderly. Nearly everyone of working age has decamped to the coastal cities to work in the factories or in construction, leaving evidence of their departure everywhere: Farm plots are abandoned, a building under construction is an investment of income earned down south. The aged who remain in Xujia sit outside, hands clasped around their knees, faces like oatmeal cookies, watching with vacant eyes the few passersby. “People would look at us and feel uncomfortable,” Tang said.

The hospital commute was a financial and medical necessity. Deng’s settlement had quickly disappeared into creditors' pockets. He needed daily treatment for his illness, but he couldn't afford the $1.30 fee for an overnight hospital stay. Deng stopped eating spicy food, a Sichuan staple, because it aggravated his illness. He slept little, because his coughing kept him awake most of the night. And he cried, knowing he would leave his wife a widow and his children without a father. In January 2006, he passed away, almost five years to the day after he was diagnosed.

PROFESSOR GALLAGHER calls the attitude of Chinese workers who have sparred in the courts "informed disenchantment." Despite the fact that many have disappointing experiences navigating the Chinese legal system, most workers say they would do it again.[32] In a survey at a legal aid center for workers in Shanghai, Professor Gallagher found that 80 percent of plaintiffs said they would sue again. Their responses were not closely correlated with the results in their case—88 percent of those who lost said they would sue again, versus 100 percent of those who won. Many workers Professor Gallagher interviewed saw their first experience in the legal system as an education, and most went on to give legal advice to others, planting the seed for future lawsuits. Some even appeared as witnesses in cases filed by other laborers. Professor Gallagher calls these workers "little experts."[33]

Feng Xingzhong grew up in the same area of Sichuan as Deng, though the two had never met before they both fell ill with silicosis and decided to fight for better compensation. He arrived in the factory towns the year before Deng and eventually found work at another jewelry factory. Conditions there were horrible, Feng recalls: Employees would emerge at the end of the day covered in dust the color of the stones they had been grinding, only their eyes visible through the powder. Former colleagues died young, but nobody knew why.

Feng, who has a thatch of thick black hair, stayed at the factory for a decade. He met his wife there, and the couple raised two children with the money they earned at the factory. “My whole life was in that factory,” he told me. We were sitting in a Starbucks in Shenzhen, its soft lighting and gentle-mannered staff at odds with Feng’s memories.

Like Deng, Feng was bundled off with a compensation package after he and other workers were diagnosed, first with tuberculosis and later with silicosis. In his fight for a just payout, Feng even enlisted Zhou Litai as his lawyer. But his case, too, lingered unresolved in the courts until Hong Kong NGOs and provincial officials took notice. With their help, Feng received almost $40,000 from his former employer. He believes it is the highest compensation awarded to a silicosis victim in China.

Inspired by the NGO staff he met in Hong Kong, Feng, whose disease has not yet progressed to the advanced stage, stayed on in Shenzhen to help other occupational disease sufferers get justice. He has become a “little expert” himself. Twenty or 30 times a day, his cell phone rings, the ring tone a recording of Feng’s son singing. On the other end of the phone is yet another worker in trouble. Feng, whose formal education stopped after one year of junior high school, tells them where to get a medical examination, how to file a lawsuit.

Workers today don’t have to struggle the way he did, Feng says. They are more aware of their rights and Chinese courts are more willing to defend them. “When I took legal action, it took a long time and I made a lot of mistakes. Many of my coworkers died before they got a ruling,” he says. “Now I feel things are much better. A lot of workers know how to file suit. And it doesn’t take such a long time.”

Judges in developed coastal areas are becoming more generous with their awards. The government is increasing legal aid to migrant workers and trying to attract more lawyers to their cause.[34] In 2006, the All China Lawyers Association, a professional organization, barred lawyers from accepting contingency fees in labor cases, in what one Chinese lawyer characterizes as an effort to prevent lawyers from taking too much of workers' awards. This lawyer expects the new rule to further lower the cost of filing suit, since workers will pay only a flat fee instead of parting with 10 percent or 20 percent of their winnings. Zhou Litai worries the decision will discourage workers who can't afford the flat fee from going to court.

There is still a long way to go in defending workers' rights. In less developed inland provinces, to which China's factories are relocating as costs rise on the coasts, the system still tilts heavily in favor of management. Because of the Chinese government's desire for economic growth, employers everywhere still have the upper hand in disputes with their employees.

"If you sacrifice workers' rights, you get a much higher GDP," says a lawyer who works on labor rights cases. "The central government cares about this issue very seriously sometimes, but the problem is with the local governments. Because the local government needs to improve their economy, and get a higher rate of GDP growth, and attract more investment."[35]

However, some observers caution that as laborers become more aware of their rights, they may become less understanding when things don't go their way. China will need to create other channels through which workers can get help more reliably and efficiently, or face increasingly violent and frequent labor uprisings. Beijing is already gravely concerned about maintaining social stability amid a wave of popular protests over everything from property seizures to pollution. But the government has to balance the need to give workers and other disgruntled citizens more of a voice with its desire to retain a firm grip on power and to keep the economy growing.

There is always the possibility that Beijing will decide that all the demands for justice have gotten out of hand. “I think there will be continued pressure and the government will have to make a choice: do they want to continue to try to have markets without political freedom?” says Professor Gallagher.[36] Labor conflicts continue to multiply. In 2005, the latest year for which figures are available, arbitration committees accepted 314,000 cases, an increase of 20.5 percent over the year before, according to Chinese government statistics.

Perfect Gem, Deng’s former employer, “suffered great loss and could not keep on with its business due to high risks associated with jewel processing and the huge sums of compensation made for occupational disease,” its lawyer wrote. Its businesses under that name have been terminated in both Hong Kong and mainland China. Perfect Silver has moved into new premises in Huizhou. Government officials are believed to have pressured the company to improve working conditions there.

However, Monina Wong, executive director of Labor Action China, a Hong Kong NGO that has worked with silicosis victims, says that even if factories have improved ventilation, employees may still be exposed to excessive levels of dust if working hours are too long. Factories may now arrange to have regular medical examinations for employees, but they may not share the results with workers. And some jewelry factories are now subcontracting gem processing to smaller workshops to avoid scrutiny. “The factories where the main production is look good,” Wong told me. “But in fact a lot of subcontracting is being done in more and more places in northern Guangdong where the implementation of the law is even worse than Huizhou.”

Perfect Silver subcontracts its gem processing to Haifeng, in northern Guangdong, according to Tony Lee, one of its salesmen at the Hong Kong trade fair. Alpha Chi, the wholesaler from Decal Jewelry, said that the situation in Chinese jewelry factories was more nuanced than it might seem. Insisting that he was not speaking on behalf of Perfect Silver, he said that in China, workers moved from one factory to another, making it difficult to determine where they might have become ill. “Nobody wants to hurt their employees, ” he said. “They are your partners.”

He added that foreign-invested factories are at a competitive disadvantage. Uneven law enforcement means that foreign-invested companies are held to a higher standard than their local Chinese rivals. As a result, the local factories have lower costs and are more competitive.

The jewelry industry has created the Council for Responsible Jewelry Practices, a nonprofit group that represents more than 60 companies in the gold and diamond industry. The group aims to promote more ethically, socially and environmentally responsible practices. It has drawn up what it calls a “code of practice” for its members.

Zhou Litai, the activist lawyer, returned to his Shenzhen practice in 2005. He says he now operates freely. “Now, when Zhou Litai helps a worker, it’s not a big deal,” he said, speaking of himself, as he often does, in the third person.

He says that the number of serious injuries, such as those in which workers lose arms, is falling. “With the increase in compensation, the cost to [factory] bosses will increase, and that will force the bosses to realize the need for better safety.” But he concedes that occupational illness, which he calls “invisible” illness, is now more common than visible injuries.

CHINA IS ONLY STARTING to come to terms with the occupational disease epidemic created over the last three decades of rapid industrial growth. For decades under the planned economy, state-owned enterprises oversaw their own occupational health and safety. Now, the economy has moved on, but the government has lagged behind in its responsibilities. Even the Ministry of Health describes the country's occupational disease situation as "grim." In a report to the National People's Congress released in 2007, the ministry gave the country a failing "F" grade for its lax oversight of companies and poor coordination among government departments with regard to occupational disease.[37]

This neglect comes at a price. Beijing estimates occupational illnesses and injuries cost the country more than $13 billion a year. Indirect costs could bring the total cost to twice that figure. Pneumoconiosis alone costs China $1.8 billion in direct economic losses, and an additional $79 million every year, according to the state-owned media.[38]

But acknowledging a problem and solving it are two different things. Prevention and early detection of work-related disease are still insufficient. Despite the increasing amount of auditing by foreign buyers and litigation, many factory managers' awareness of occupational health has not significantly improved.

Government supervision of workplaces is too lax. Even China's state-controlled media admit the country's 2002 occupational diseases prevention law is widely ignored.[39] Su Zhi of the Ministry of Health has noted that only one million of the six million workers exposed to dangerous working environments got checkups in 2001.[40] "China has a long way to go in controlling hazardous dusts in the workplace, and in reaching the WHO's goal of eliminating pneumoconiosis," conclude two doctors at the Harvard School of Public Health.[41]

Part of the problem with illness as well as injuries in Chinese workplaces, say labor advocates, is poor coordination between government ministries. In an interview, Su Zhi told me that the Ministry of Labor and Social Security, the State Administration of Work Safety and the ACFTU needed to strengthen their cooperation. As it tries to make workplaces safer, China will also have to invest in training more people in occupational health.

Caring for sick workers will place an additional burden on China's overtaxed health care system. Government spending on health care has been rising as a fraction of gross domestic product, but falling as a percentage of total public and private spending on health care.[42] When the government doesn't provide, ordinary people pay for their own health care.

Much of the burden of treating Chinese workers who get sick on the job could well fall on hospitals in rural areas in or near migrants' hometowns. There are more than two dozen provincial occupational health institutions in China, but they tend to be in urban areas. The quality of health care is severely compromised in the countryside, where the quality and number of doctors has been falling. [43] Most of China's government spending on health care goes to the cities.[44] "Ever since the inception of the economic reform programs in the early 1980s," writes Liu Yuanli, assistant professor of international health at the Harvard School of Public Health, "the attitude of the Chinese government towards rural health financing can best be described as *laissez-faire.* The dominant thinking of policymakers has been that voluntary community financing schemes would emerge with economic growth."[45]

Patients' access to health care in China is determined by their ability to pay. Nowhere is this more true than in the countryside, where the vast majority of residents lack health insurance. About 80 percent of rural residents were uninsured as of 2003, compared with about 50 percent in the cities.[46] Tian Chengping, minister of labor and social security, has said that China's social insurance system covered just 6 percent of its population.[47]

China is trying to fix the situation with new schemes for health care in the cities and the countryside. But migrants who lack urban *hukou* are left out of the new urban health care program.[48] And critics say the new rural cooperative medical scheme does not do enough for the country's poorest residents.[49]

Concerned about the threat to social stability angry workers pose, Beijing is trying to expand insurance coverage for migrant workers. In 2004, the State Council, China's cabinet, introduced a regulation that made it mandatory to have occupational injury insurance in every type of enterprise. Two years later, the Ministry of Labor and Social Security introduced a three-year program called "Safety Action" to provide injury insurance for migrants in dangerous jobs.[50] The government also established a pilot program in ten provinces to monitor and report occupational diseases among migrant workers.[51] These programs are already raising labor costs for Chinese factories in some areas. In Shanghai, which has been trying hard to improve coverage for workers, welfare costs are rising rapidly.[52]

But this is only the beginning of the rise in welfare costs. Even though the government has been trying to insure more migrants, by its own calculations, only a fraction of migrants were covered by work injury or medical insurance as of

March 2007.[53] In characteristically ambitious fashion, Beijing has said it hopes to have 140 million migrants insured by 2010.[54] It seems highly unlikely to come close to meeting that target. But as it strives for greater protection for its workers, China will be turning to factories to pick up more of the tab.

Su Zhi of the health ministry says that China needs to raise the level of worker protection, to find a level appropriate to China's economic situation. "We have to pay the price for economic development, " he told me. As it does this, China will need the help and understanding of the rest of the world. "Especially the multinationals, " he said. "They brought dangerous work and pollution and left with the profits."

BACK IN SICHUAN, Tang has begun socializing with other wives of silicosis victims. At a dinner of soup filled with eels, tofu and lotus root one cold winter night in a nearby town, Tang and Feng Xingzhong's wife, who met as a result of their husbands' legal battles, discuss how Chinese factories became dangerous enough to kill strong, healthy men. "Isn't it because you Americans have brought all your bad factories to China?" Feng's wife asks me. "I heard it's because China has so much corruption, and it needs the money so it wants foreign investment," Tang offers.

A year after Deng's death, Tang is still consumed by the loss— not only of her husband, but of the comfortable life they worked so hard to build. A benefactor in Hong Kong pays her children's school fees, but Tang is still in debt. Sometimes, she thinks she'd like to go back and ask her former employer for more money, tell him it wasn't enough.

"When we went out to the factory, we had no idea that this disease existed," Tang says. "If I had known that we would suffer from this kind of disease, I wouldn't have come out to work there. I would have stayed home and continued to work on the farm." Tang is poor again, living in her sister-in-law's home and scraping by selling vegetables. She worries for her children. "I don't mind tasting bitterness," she says, using the Chinese expression for hardship. "I just don't want my kids to have to."

"What I really want is for my kids to get good grades so that in the future, they don't have to go out to the factories to work," she says that night over dinner. "The hours are long, the salary is low, and when you get sick, you get fired."

The following summer, Tang's daughter, who is 16, passes the entrance exam to high school. Tang, who fears the money from her Hong Kong patron will not be enough, will pull together the money to pay her tuition. She will do whatever it takes to ensure her daughter never has to go south, to the factories.

END OF REQUIRED READING… You are welcome to read more but not required.

Chapter 4

Optional. You are NOT required to read this chapter….

THE GOLD RUSH

HIGH IN THE HILLS of northern Shanxi province, beyond the reach of roads, above the frenzy of civilization, the air is still. Shrubs and trees cling to the steep, dusty cliffs. A forested valley spreads below and then rises to another row of hills in the distance. There is little evidence of human life here, no signs or houses or power lines. Just a lone, insistent sound, so soft it is barely audible at first. *Tok. Tok . . . tok. Tok. Tok . . . tok.* The noise is coming from a large, dark hole in the mountain, tucked anonymously into a ridge. Next to the hole is a black, greasy pile the size of a dinner table, glinting in the late afternoon sun.

Coal.

Ma Jianguo, a short, thin man in a soot-covered brown uniform and black rubber boots, winds his way expertly around the cliffside until he arrives at the hole, a tiny coal mine. He calls into the opening toward the noise, which by now is clearly someone scraping the soft coal from the mountain.

A moment later, the scraping stops and a man's face appears, floating in the black and smudged with coal. The man is wearing a tan shirt, brown pants and a hard hat with a head lamp. He is startled to have visitors. Ma greets him and turns his attention to the heap of coal, turning over a few pieces in his hand. "I can get $24 for a ton of this," he says proudly.

Coal has been Ma's life for more than two decades. He came to this mountain outside Taiyuan, the capital of Shanxi province, as a teenager to work in the mines. He has been here ever since, cutting into the seam deep underground in a state-owned mine where he is a supervisor. At 41, he is married with three children, two boys and a girl. He lives in a modest one-story house near the mine.

In the summer of 2006, Ma decided that the $263 he earned every month at the state-owned mine wasn't going to be enough to support his dreams for his family. Ma took time off work and started hiking the hills up behind his employer, combing the quiet mountain for evidence of coal deposits. By August, he had six men working on three deposits near the surface. Ma had become the small-town version of a national scourge: an unlicensed private coal mine owner.

COAL, more than any other product, lies at the heart of the China price. More than two-thirds of China's energy supply comes from coal, a higher ratio than either Japan or the United States.[1] The country is the largest producer and consumer of coal in the world. Coal keeps China's economic engine—including the export factories, pumping like pistons near the coasts—turning over.

It is also China's dominant source of air pollution and a growing environmental threat to the rest of the world. Burning coal, the world's cheapest and dirtiest source of energy, produces a nasty cocktail of emissions: nitrogen oxide, mercury, carbon dioxide and sulfur dioxide. China is the world's largest emitter of carbon dioxide and sulfur dioxide. The country's coal-related pollution is blowing around the globe, turning up as far away as the west coast of the United States. But China feels the effects of its coal habit most acutely: It produces 70 percent of the smoke and dust in the air in China, and 90 percent of the sulfur dioxide is from coal.[2]

Carbon dioxide emissions lead to global warming. Sulfur dioxide, when combined with water, causes acid rain, which affects waterways and crops. Nitrogen oxide contributes to smog, and mercury can cause neurological damage in infants and children.

Coal is a threat to China's people in other ways as well. China has about 28,000 coal mines, of which some 24,000 are small mines.[3] These small mines produce about a third of China's coal supply. But they are also dangerous: As larger, state-owned mines gradually modernize, installing machines to replace human labor and improving safety procedures, many small, private coal mines continue to rely on riskier, more traditional methods. As a result, they generate more than 70 percent of China's coal mine deaths.[4]

Which is also to say that small Chinese mines produce most of the world's coal mining deaths. China produces 35 percent of the world's coal and 80 percent of its reported coal mine deaths. In 2006, 4,746 people died in the country's mines. By comparison, U.S. coal mining deaths the same year totaled 47—and that was the highest level in a decade.

Once useful to Beijing because they helped meet the country's burgeoning demand for coal, small, private mines had become a nuisance by the late 1980s. Underground mines were sneaking their product onto the already-clogged railway system illegally, taking capacity away from the large, state-owned mining companies.[5] They were inefficient and produced lower-quality coal. By the 1990s, they were adding to an unwanted coal surplus.[6] And they were unsafe. China has been trying to shut them down ever since.

Small mines without licenses, like Ma's, survive by a combination of corrupt means, including bribing local officials. Often, the same local officials who are supposed to be supervising the sector have stakes in mines themselves.[7]

But China's small mines also prosper because they meet a crucial need. China is so hungry for power that it is building at least one coal-fired power plant every week to keep pace with demand. Rising coal prices have made mines a lucrative investment.

People in Shanxi province live and breathe coal's twin effects. Shanxi is China's largest coal-producing region, generating about a quarter of the country's production each year. The resource is a mainstay of the local economy, along with iron and steel, chemicals, cement and electricity. Shanxi ships nearly 80 percent of its coal to other provinces, sometimes on railway cars and sometimes over power lines after it has been turned into electricity.[8] The area's power stations supply Beijing, some 250 miles to the northeast of Taiyuan.[9] Coal mining and refining provide the main source of income for 80 percent of the counties in Shanxi province.[10]

Beyond the trucks full of black lumps, the most visible legacy of the area's coal deposits is a thick, noxious blanket of smog. In 1998, the United Nations Environment Program (UNEP) declared that Taiyuan had the most polluted air in the world. Measured concentrations of particulates, tiny particles of liquid or solid suspended in gas, were six to seven times World Health Organization (WHO) standards.[11] Exposure to particulates is believed to increase susceptibility to respiratory illness or aggravate existing lung or heart disease.

Taiyuan became a focus of the international aid community and one of Beijing's first test cases for experiments with proenvironment policies. In 1998, China's National Development and Reform Commission and what is now known as the State Environmental Protection Administration (SEPA) declared Taiyuan the first pilot city in an effort to encourage "clean" production. The UNEP helped the city develop a "clean" production program, an effort to encourage polluters to reduce emissions and conserve resources. The Asian Development Bank loaned Taiyuan money to fight air pollution. Resources for the Future, a nonprofit Washington, D.C., think tank, even advised the city on creating a sulfur dioxide emissions-trading program.

Local companies responded, at least initially. Taiyuan Steel Group, a major local employer, banned the use of sulfur-heavy coal. State media reported that the city forced thousands of polluting companies to shut down. Coking plants, which release unhealthy emissions when they burn off impurities from coal, were closed south of the city.[12] Coal is baked to make coke, which in turn is used to smelt iron ore into iron.

Eager, no doubt, to show results, the state media cheerfully reported that people had started to exercise outdoors again.[13] Liang Liming, director and Communist Party chief of Taiyuan's environmental protection agency, was celebrated for her contributions to improving China's environment.[14]

But the smog never really disappeared. Companies continued to build new, polluting projects without government approval. Others purchased equipment to reduce environmental damage, but rarely used it.[15] People still used coal to cook and heat their homes.[16] And in the hills outside the city, private coal mines continued to pop up, producing ever more coal under treacherous circumstances.

Today, on a summer day, when pollution is supposed to be lighter, Taiyuan's gray air is sour, acrid and bitter. The stench gathers in your nostrils and at the back of your throat. Instinctively, you try to avoid yawning or gulping down too much of it. After a day out near the mines, the smell reappears as a black stain in your tissue when you blow your nose. It collects in your ears, in the corners of your eyes and on your skin. Taiyuan's air pollution is clearly a serious threat to public health. A 2001 report by the WHO and the United Nations Development Program found that particles with a diameter of less than 10 microns—which are more dangerous than larger particles—composed between 74 percent and 87 percent of the total suspended particles in Taiyuan's air.[17]

Unsurprisingly, pollution affects people's health in Taiyuan. In the winter, respiratory illness and colds are common. One survey published in 2002 found that 64 percent of children tested in the city had excessively high levels of lead in their blood.[18] Exposure to lead can lead to neurological damage, particularly in children.

Four of the world's 20 most polluted cities are in Shanxi. Today, nearby Linfen, another coal-producing Shanxi city, has claimed the title of the most polluted city in the world. Taiyuan, however, has traded one notorious title for another: once the most polluted city in the world, Taiyuan is now the city with the highest incidence of death from lung cancer in Shanxi province.[19]

TAIYUAN IS A MICROCOSM of China's environmental disaster. The prioritization of economic growth above all else led officials and companies to neglect the environment, with horrendous consequences. Even in places like Taiyuan, which face obvious threats to public health and the safety of the workforce and where the government has tried to address the problem, the desire for development still wins out. The hunger for wealth trumps concern for health and safety, with catastrophic results.

A third of the people in Chinese cities are breathing polluted air.[20] More than half of 696 cities and counties covered by a national monitoring program in 2005 were affected by acid rain from sulfur dioxide pollution. All of the rain that fell in certain coastal areas in Zhejiang and Fujian provinces was considered acid rain.[21] Only six of 27 of China's largest cities provide drinking water that complies with government standards .[22] The World Bank has put the annual bill for China's air and water pollution damages at $54 billion.[23] By China's own account, environmental damage already costs the country the equivalent of 10 percent of GDP a year.

In rural areas, the destruction of the environment is so bad that it is creating what SEPA vice minister Pan Yue calls "environmental refugees"—people evicted from their land by pollution. In the 1990s, an estimated 20 million to 30 million farmers left their plots as a result of environmental deterioration. Another 30 million to 40 million more may be on the move by 2025, according to one estimate .[24] Pan Yue has warned that China may ultimately have to deal with 150 million environmental refugees. Many flock to the cities for work, joining the crush of migrant workers.

Those unable to migrate are increasingly willing to challenge polluters with public action, adding to China's mounting protest statistics. Demonstrations often lead to violent clashes with police, arrests and the deaths of protesters. "In some places, environmental problems have affected people's health and social stability, and damaged our international image," Zhou Shengxian, SEPA's head, has acknowledged.[25] Pollution played a role in some 50,000 protests in 2005, according to SEPA.[26] Sometimes not-in-my-backyard protests force the government to move factories into less populated areas, where there will be fewer people to complain. Often, the government is less responsive, compelling some people to take their grievances to court.

In 2006, some 1,700 residents of Xiping village in southeastern Fujian province filed what is believed to be China's largest environmental class action suit to date against a chemical factory. They argued that the factory had polluted the river and wrecked their crops. The Center for Legal Assistance to Pollution Victims, a pioneering nongovernmental organization in Beijing, has advised on other cases and, its founder Wang Canfa has said, is now winning more lawsuits than it loses.[27]

The effects of environmental pollution on China's health are only starting to be understood. Some of the "cancer villages" and towns with abnormally high rates of birth defects, described in chapter three, are the products of local pollution. At the same time, doctors and researchers report a rising incidence of asthma and lead poisoning among children in polluted cities. The pollution is equivalent to letting children smoke two packs of cigarettes a day.[28] More than half of children in 28 cities surveyed in China have levels of lead in their blood that exceed the World Health Organization guidelines, leading to widespread blood poisoning.[29] Air pollution now contributes to at least 400,000 deaths every year in China, perhaps many more.[30] It costs Shanghai more than one billion dollars a year in health care expenses, according to Fudan University's School of Public Health.[31] "There's an environmental health crisis in China," says Jennifer Turner, director of the China Environment Forum at the Woodrow Wilson Center, a Washington, D.C., think tank.

The central government, increasingly aware of the costs of prioritizing economic growth over the environment, is trying to do something about the problem. It has set targets (which it has missed) to reduce the country's energy consumption and cut pollution. Among its other initiatives are encouraging coal-burning power plants to install scrubbers to limit sulfur dioxide emissions and promoting the development of alternative sources of energy. It has also drafted a comprehensive set of environmental protection laws. But, as with laws on labor and other issues in China, the problem is enforcement. One reason for the lack of enforcement is the heavy emphasis on economic growth. Traditionally, local government officials have been evaluated on the amount of growth they recorded in gross domestic product.

This is starting to change. Environmental protection is quickly moving up the agenda of policymakers in Beijing. In 2004, as the country's environmental problems deepened, Wen Jiabao, the Chinese premier, introduced the concept of "Green GDP," which would deduct the costs of environmental damage from traditional GDP. Green GDP data would be used to show the environmental costs of growth, so that officials' promotion would better reflect the quality, rather than simply the quantity, of growth.[32] But Green GDP remains controversial. Some provinces are unwilling to participate, and even the National Bureau of Statistics has opposed the public disclosure of Green GDP figures.

The communities where the complexity of China's environmental crisis is most clear are those where the local economy depends so heavily on polluting industries that change is harder to effect.[33] These communities lie at the crossroads where China's environmental disaster and its widespread labor abuse meet.

Covered in soot, sucking down smog, the people in these communities live with pollution in part because their livelihood depends on the very industries that are making them sick. The hills outside Taiyuan, in northern Shanxi province, are among these places.

IN THE MOUNTAINOUS AREA outside the city where Ma lives, mines continue to churn out coal to feed a nation hungry for power. Enormous orange and blue trucks wobbling under the weight of huge heaps of coal trundle down the potholed road out of the district every day, passing a sign that reads STRENGTHEN MANAGEMENT TO PROTECT THE ENVIRONMENT. The air outside is thick with dust and smoke.

At the state-owned mine where Ma works as a supervisor, soot-faced miners in brown and black jumpsuits emerge into the daylight and find relief in cigarettes. They mill around the tracks where the miniature trains they ride down into the pit are parked. Inside the mine office next door, coal dust shed by off-duty miners covers the floor and cigarette butts litter the hallways. Women do the ceaseless work of scrubbing soot from the toilets.

In the hills above, beyond rows of one-story red brick homes with firewood stacked outside and dirty-faced children sucking on Popsicles, Ma leaves his pile of coal and strides across the hill. He, too, has just finished a shift at the state-owned mine, and he is covered in soot. Everything—his fingernails, his furry eyebrows, even his identity card—is coated in a thin layer of black powder. In the car on the way up the hill, he covered the seat with a towel to protect it from his blackened pants in what seemed like an old habit. Ma agreed to show me his mines on the condition that I take no pictures. To protect his identity, I have changed his name.

Ma operates three mines and employs a staff of six migrant workers to work in them. The mines are in varying stages of development—two are still shallow holes, not reinforced by wood or metal, and one is more developed. Ma arrives at the most developed mine. He is proud of it, proud enough to memorize its dimensions: two meters wide at the bottom and 1.8 meters wide at the top, it is 1.3 meters tall, a black horizontal chute into the side of the mountain. It's hard to tell how far back it runs, but it is deep enough to swallow three men.

The tunnel has no ventilation system besides the wind. Wooden beams reinforce the mine's opening and the dark horizontal tunnel that burrows into the hillside. On the wooden beams over the entrance are the Chinese characters for safety and life, written in pink chalk. In the center is a hand-drawn pink Christian cross. Ma is Catholic, a relatively unusual set of beliefs to hold in China. He claims to speak Latin, which he demonstrates in a fluid, staccato stream.

Ma calls into the mouth of the mine, but no one answers. The seconds tick by. He calls again. More silence. If anyone is in there, they don't want to be found. Beijing's campaign against illegal mines has driven these miners deeper into their tunnel. A hard hat lies by the entrance, and Ma picks it up, gets on his hands and knees and crawls inside.

A few moments later, he crawls out and walks toward another opening so snugly tucked into the hillside you would have to know it was there to find it. A miner, his face smeared with soot, emerges from the hole. He is wearing black pants and a brown shirt and flimsy slip-on shoes. He has no visible safety equipment.

The miner, who declines to give his name, left his family in Hubei province nearly a decade ago to work in Tangshan, another industrial city in Shanxi. He arrived in this area only two months ago, hoping to find work in more shallow mines.

Migrant workers do some of the most dangerous jobs in the Chinese mining industry. Workers in private mines generally have no insurance, no safety equipment and no job security. In the state-owned mine I visited, migrants often worked the closest to the seam and the farthest underground. Permanently employed, better-educated staff worked closer to the surface. As one miner described it to me, you can tell the rank of a Chinese miner by the amount of soot on his face.

Officials have been trying to shut down private mines in this area. They have even asked people living along the main road not to rent rooms to migrant workers. But the migrants have simply moved higher up the mountainside, closer to the mines. They need the money and the mines need them. The hills are still dotted with illegal private pits, where explosions and other accidents are still common, according to an employee at a state-owned mine. “It’s all about enormous profit,” he said.

Ma’s employee says he has no choice but to work in the illegal pits. At 50, he’s too old to be hired by a state-owned mine. But he needs the 1,000 renminbi a month he can earn up here in the hills: He has three children to support, although one of them has already started working in a factory in Shenzhen. He is desperate to keep his job. “My workers can eat a lot of bitterness,” Ma told me.

IN THE BLEAKNESS of Taiyuan’s rust-belt economy, private mine owners live well. They are the speculators in the country’s gold rush for coal. One local journalist says everyone knows who the mine owners are because they drive the nicest cars: Humvees, 7-series BMWs, Rolls Royces.

Private mine owners are new money. They own apartments and entire buildings in Beijing, wear expensive watches, buy cars for their friends and relatives. They spend lavishly on entertaining, particularly of the government officials who regulate the sector. Their children attend private school, in China or overseas. Their car and home purchases are often made in cash. According to one Chinese media report, a third of all millionaires in China are coal mine owners. [34] With all their cash, coal mine owners make attractive targets for kidnappers. Some hire bodyguards for protection.

Ma is just a baby mine owner, only a few months into his venture, so he has little to show for it so far. He lives in an immaculate, modest, one-story brick house along a dirt path streaked with trash and reeking of urine. He hasn't sold any coal yet, because, he says, he is still examining the quality of the deposits. For now, he is stock-piling the coal his workers produce. He won't say where the coal is stored. But Ma knows what he will do once he starts selling it: put the profits aside to send his younger son to university in the United States. Wide-eyed, with a military-short haircut and impeccable manners, Ma's son attends a nearby school with other miners' children. He is only ten, but his father's mine is an investment in his future.

It was Ma's desire for upward mobility that brought him to the hillside above his mine, and his employees' hope for the same that compelled them to work for him. The same ambition helps Ma keep his illegal mine open, despite frequent sweeps by government inspectors. Bribes to the right officials go a long way. "If you have money, you can keep working and use money to get rid of trouble," Ma says.

Corruption is endemic in the government agencies in charge of coal mines in China. Despite an obvious conflict of interest, many local officials invest in mines. When the Communist Party's Central Commission for Discipline Inspection issued a mandate in August 2005 that all government officials and executives in state-owned enterprises relinquish their stakes in coal mines, over 5,370 officials came forward to confess 755 million renminbi worth of investments. [35] It's safe to assume this was hardly full disclosure—a point that even the central government's mouthpiece, the *China Daily,* concedes.[36] Not to mention that many officials have invested in coal mines in their relatives' names.

In the rush for coal, some entrepreneurs in Shanxi have even set up illegal coal inspection stations that take a cut before the coal leaves the area .[37] Corrupt village officials are also involved in the transportation and sale of illegal coal.[38] Officials who aren't paid off have been known to turn up at a mine and demand bribes on the spot. The underground dealings of coal mines are replicated elsewhere in the country's energy supply chain: A fifth of China's power plants are illegal.[39]

The hunger for wealth around China's coal mines has even perverted the watchdog role of the media. The beating death of a Chinese journalist at the orders of a mine owner in a major mining area outside Taiyuan in January 2007 shed new light on the phenomenon of "fake" reporters. These are people who arrive at the scene of a mining accident and extort money from the owner in exchange for not reporting it—a different breed of ambulance chaser altogether.

Keeping this wealth machine of illegal coal mines running requires a heavy cloak of secrecy. "When there is an incident, I pay more than 100,000 renminbi, or several hundred thousand renminbi, or even as much as one million renminbi" to muzzle the media, one mine owner interviewed by the *Beijing News* said.[40] Reporters from larger media organizations are reportedly better paid than those from smaller, local groups. Authentic reporters are regularly beaten, harassed and detained for investigating mining accidents.

Mine owners resort to ghoulish means to cover up accidents, burying bodies far away, bribing family members with hush money, claiming that the workers died of disease, keeping other employees in the same mine in the dark about the incident. The larger the accident, the greater the need to collude with government officials to keep it quiet .[41]

While the executives at the state-owned mine I visited were surprisingly friendly, one cautioned his colleagues that Chinese mines were full of secrets best kept from Americans. Even Ma hung up the phone the first time his colleagues suggested an interview with me. (He later capitulated.) “If we say that Chinese coal is tainted with blood and the news reaches the United States, what will they think of China?” the executive asked the other people in the room with us, presumably assuming I couldn’t understand.

Ma’s employees are terrified of media exposure, more terrified, it seems, than of the possibility of contracting respiratory disease, being injured or dying in the mine. “Please don’t publish this in the newspaper or I will lose my job,” one of Ma’s miners, who said he felt safe working in the mine, begged me. “We are working for the boss and I’m afraid if you publish something, that will harm the boss’s well-being. We need money and our boss needs to survive, too.”

Ma is less concerned. In exchange for his bribes, he is notified when inspection teams are coming to his area for a crackdown. On those days, he tells his employees their services won’t be required. The holes his staff is digging in the mountain remain quiet and anonymous, the only sign of activity a wheelbarrow parked outside. “When supervision is tight, we stop mining, and when the situation improves we start again,” Ma explains. In the few months he has been operating, Ma hasn’t had to suspend production once.

COAL IS THE LIFEBLOOD of Ma’s community. The resource provides employment for at least 10,000 people and their families in one community alone. But it is also creeping into residents' bodies in unhealthy ways.

"It feels terrible when I sit still," says Xu, a miner's son who works as a driver. Xu is at home on a Saturday morning, lying on a bed covered with a red and pink striped blanket. His arm is hooked to an intravenous drip hanging from a wire strung across the ceiling. The television drones from the opposite side of the room. Xu has rhinitis—a stuffy, itchy nose, coughing, sneezing, postnasal drip. The intravenous drip helps alleviate the symptoms. It's a minor ailment, but his father and friends have it, too. One friend joined the army and moved to the southern province of Yunnan. His rhinitis disappeared. Ma's wife has rhinitis, too. Rhinitis can be caused by allergens, including pollens and mold. In these cases, it is commonly called hay fever.

In the hills outside Taiyuan, it's not clear what is causing the rhinitis. The air is certainly full of soot. But it is also common in rural areas in China for people to use coal-burning stoves, which cause indoor pollution. "A lot of people in Shanxi have rhinitis because of the coal," Ma explains. "When we were young, we got it because of the smoke of burning coal."

It's highly unlikely that rhinitis is the only health problem in Ma's community. Coal mining can lead to pneumoconiosis; indoor pollution from coal-burning stoves is known to increase the incidence of respiratory diseases and infections; mines discharge toxic wastewater without treatment, which affects local crops.

And yet the area seemed poorly equipped to handle health problems. A teacher at Ma's son's school says many of his students have rhinitis as well as trachoma, an infectious eye disease caused by bacteria that can lead to blindness. The most gravely ill students are sent into town for treatment. The teacher would prefer if these problems could be treated locally. He asks whether I know of any good treatment for rhinitis.

Most everyone else I meet, though, seems willing to sacrifice some of their health in exchange for a piece of the profits from the country's coal rush. Who has time for rhinitis and respiratory disease when there is so much money to be made? And yet Taiyuan is a sober place, hardly the kind of town that seems to be in the middle of anything exuberant. Perhaps the human sacrifices involved in powering China's economy does weigh on people's hearts.

When I first met Ma in an office at the local coal mine and asked him about his decision to open his own mines, he wrote down a poem in my notebook. I never figured out whether it was something he wrote himself or he had borrowed it from elsewhere.

No one cares about other people's concerns, so don't complain about your fate

People lend you money when you have it, and they turn you down when you need it

When it rains, an umbrella is welcome, but it seldom comes

When you're doing well and expect more, someone vicious will always do his work.

IN 2006, Shanxi province shut down 3,550 illegal coal mines.[42] In November of that year, the Ministry of Supervision and the State Administration of Work Safety published new regulations spelling out penalties for government officials or employees of state-owned enterprises whose corruption leads to workplace accidents that cause injuries or fatalities.[43]

In May 2006, five department chiefs in Taiyuan's safety audit department were forced out of their jobs. A year later, seven safety audit department heads were in prison, most for corruption.[44] Shanxi plans to lower the number of coal mines from 3,500 to 2,500 by 2010.[45] The central government wants to shut small mines—not only coal, but also other minerals including iron ore, gold and copper—as part of an industry consolidation.

The campaign to improve mine safety and clean up the environment continues, but the country's appetite for coal only intensifies. [46] Its demand for the energy source is expected to more than double by 2025 .[47]

The rise in demand is helping propel prices for coal ever higher, making it harder to close small mines. Coal prices doubled between 2003 and 2007. With these kinds of prices, "there's not a lot of incentive for small coal mines to stay shut," says Trevor Houser, director of the energy practice at China Strategic Advisory, a New York consultancy. China is investing in other sources of energy, including hydropower, natural gas, nuclear plants, wind power and clean-coal technology. With help from foreign investors, Shanxi is building a power plant that will harness methane produced in coal mining. China is also moving toward coal liquefaction, in which coal is converted into liquid fuels such as gas or diesel.

But even as China develops alternatives to coal, the amount of energy needed to power its economy is so great that most new sources can only provide a fraction of total demand. Even the gigantic Three Gorges Dam, the hydroelectric dam built across the Yangtze River that is five times the size of Hoover Dam, doesn't provide enough power to unseat coal. "It's hard to scale up any alternative technologies," says Houser. "In the medium term, it's still coal."

That means more pollution, and higher clean-up costs down the line. Investment in scrubbers for coal-fired power plants will cost the industry money. That could make power more expensive, which would in turn raise costs for manufacturers. These additional costs could well affect the competitiveness of Chinese factories. Or the increase in costs might be so universal that Chinese factories are able to pass it on to foreign buyers—and ultimately, perhaps, to foreign consumers of Chinese-made goods.

The effect of air pollution on health will lead to countless lost work days and contribute to the early retirement of employees. Caring for people made ill by pollution will add to China’s health care costs and tax the already struggling health care system. Without substantial health care or legal reform, families will end up picking up the tab for the health costs that result from China’s worsening environmental pollution. That might be enough to make people in and around Taiyuan take to the streets in protest.

About the Author

Alexandra Harney has been working in Asia as a journalist for most of the past decade. She has covered China and Japan for *The Financial Times* and was editor at the newspaper in London. From 2003 until early 2006, she was the *FT*'s South China correspondent. This is her first book. For more information, please visit thechinaprice.org.