Manufakture

By TED C. FISHMAN

Most of the pharmacies in China that dispense Western-style medicines have an antiquated, if reassuring, air about them. There are no posters on the walls for brand-name drugs. Candy is not for sale. Photo processing is not available. Druggists work in long white lab coats and surgical hats that could have been salvaged from a World War II hospital ship. Some pharmacies require prescriptions for the most potent drugs, others only an earnest chat with a druggist. Drug orders create paperwork that passes through three or four bureaucratic layers before reaching the solemn cashier, who issues a handwritten receipt.

Such an old-fashioned scene might argue for just how far China trails the United States and other advanced economies, where both science and marketing are seemingly years ahead. Yet these pharmacies also represent a current and urgent battleground in one of the most important struggles between the developed world and China's surging economic power. This is the fight over intellectual property and the related investments essential to the knowledge economy, that amorphously defined new world in which better ideas, not faster, cheaper hands create jobs and wealth. Despite their appearances, Chinese pharmacies are stocked with expertly copied versions of some of the world's most profitable medicines, patented products that generate hundreds of billions of dollars' worth of business in the United States, Europe and Japan. Even the very latest miracle drugs sell in China for a fraction, often one-tenth or less, of what their authorized equivalents in the United States cost.

Foreign companies lose control of their goods in two related ways: to counterfeiters who copy products and then sell them under different or altered brand names, and to pirates who make look-alikes and try to pass them off as the real thing. Using a lost-sales calculus, which measures the losses to foreign companies by determining the value of the dubious goods sold, the U.S. Department of Commerce estimates that American companies, as a result of counterfeiting and piracy, lose between $20 billion and $24 billion annually. The Japanese sacrifice even more: $34 billion. Throw in the sales lost by the European Union, and the cumulative losses for the three economic blocs approach $80 billion.

While losses to American and other advanced economies are high, China's appropriation and dissemination of the world's most valuable products and technologies, if they continue unabated, will ultimately mean a lot more than dollars lost. China's pirating and counterfeiting could radically change the way entertainment, fashion, medicine and services are created and sold. The companies, big and small, that Americans work for could be weakened. Chinese practices might reduce the prices of what we buy, by undermining the powerful companies that now control essential but expensive goods like drugs and computer software -- or these practices might, should China's unwillingness to accede to American copyright demands ignite trade wars, drive prices up. A U.S. consular official in China who requested anonymity -- few American officials are willing to speak openly about sensitive issues relating to China -- told me: "Nothing has a higher priority in our trade policy than the fight to protect American intellectual property. It is every bit as important an effort for us as the war against weapons of mass destruction."

The analogy has some merit. As with stolen bombs, the chief worry about losing control over intellectual property is not that American manufacturers will forego sales opportunities; the fear is that its new "owners" will turn our own innovations back on us and inflict much broader economic damage. For the United States, the world's most formidable producer and exporter of invention, entertainment and trademarked brands, the stakes are highest. William H. Lash III, the Commerce Department official who is leading a new initiative to change China's practices, vows that the Bush administration will take "whatever means are necessary" to force a change.

What makes China so troubling for American and other foreign companies is that the country is both a potential rival, with an alternative legal approach to intellectual property that limits their prospects in China and weakens their competitive strength globally, and a haven for pirates and counterfeiters. Start with the damage that fake drugs, for example, can do. Whether well made or poorly, they knock the genuine thing out of the market. According to the Chinese government-run press, hundreds of thousands of people in China have died from fake drugs that are either toxic or do not contain the active ingredients that users need. Drug companies report an increased threat from counterfeits entering the legitimate supply chains around the world. Theriault, a 26-year veteran of the F.B.I. who now helps orchestrate anticounterfeiting efforts on behalf of Pfizer, says the company, working with Chinese authorities, has "seized millions of units of counterfeit pharmaceuticals and thousands of kilos of compounds" used to make them. In the worst cases, the fakes are commingled with legitimate products. "You might have 2 bad pills mixed in with 28 good ones," he says. (In May 2003, 200,000 bottles that had been sold in U.S. pharmacies and that contained counterfeit Lipitor, Pfizer's cholesterol-lowering pill, were recalled.) Fakes "can ruin a brand and ruin a company," Theriault says.
But if bad imitations are a big problem, good imitations may be a bigger one. Pfizer happens also to be a prime example of what is arguably the most serious threat to U.S. knowledge-based companies in China: its intellectual-property rules. In the case of drugs manufactured before China agreed (in order to join the World Trade Organization) to adopt patent standards closer to the international norm, production continues as before -- that is, without any licensing fees paid to Western companies. Even today, however, Chinese companies, many of them government-run, simply continue to "reverse engineer" - that is, take the known ingredients and work backward to figure out a process that produces accurate copies of -- the drugs (including recent blockbusters) and pay the foreign patent holders nothing. Increasingly, China's pharmaceutical companies are rushing to claim patents for their copies before foreign patent owners can assert their rights. This is what happened with Pfizer's Viagra, which has multiple Chinese imitators: the Chinese authorities denied patent protection for Pfizer and opened the market to Chinese knockoffs instead. (Pfizer is appealing.)

Press coverage in China of the Viagra decision made a point of noting that one Viagra pill costs 1 yuan to make, or around 12 cents, yet it sells for 98 yuan, or about $12. That sort of difference is sure to pique the attention of margin-squeezing Chinese manufacturers -- and perhaps encourage more copycats to rush into the market. Selling Chinese-made Viagra could turn a company into a future pharmaceutical Goliath, which would please China's rulers.

Certainly China also has a public health incentive to see that drug prices are affordable for its people, who earn on average one-fortieth of what Americans do and who rarely have health insurance. China's strategy often works: the fear of knockoffs entering the market drives the price of the patented drug down, and many important drugs cost less there than they do nearly everywhere else in the world. (Historically, medicines lacking patent protection, either because a time limit has expired or because countries like India or China simply offer no such protection, can experience price drops of more than 90 percent.)

The threat to American interests is not hard to identify. According to the Milken Institute, Big Pharma employs 400,000 Americans directly, creates another 2.7 million jobs and contributes $172 billion to the U.S. economy. It is one of the most important engines of the knowledge economy; in 2003 the pharmaceutical industry invested $33.2 billion in drug research. That does not include the nearly $30 billion spent on life sciences by the publicly financed National Institutes of Health, which pays for research that leads to commercial drugs. Weaken the drug industry and you weaken one pillar of the U.S. economy. And Pfizer's trouble with Viagra in China demonstrates just how vulnerable the American knowledge economy is in a world where ideas "protected" by our laws trade freely nonetheless. Behind almost every blockbuster drug, killer software application or computer-chip design is a public infrastructure that has steered uncountable sums and the country's best talents toward their creation.

Consider what an advanced economy like ours does best: make movies, produce television shows watched from Helsinki to Cape Town, turn out global pop stars. We design the software and processes that streamline the operations of giant retail chains and global high-tech manufacturers. We engineer advanced engines and the guts of the world's computers. We devise brands, durable corporate identities and fashions. We conjure new ways to move money and put it to work. We turn the most basic tasks into knowledge work. Modern printers, to note one example, rely heavily on the most advanced automated presses, computerized design tools and management and shipping for delivering materials efficiently to consumers and are as dependent on the latest software and technological innovations as a biotech lab. And those 2.8 million American workers who in recent years have lost their factory jobs? They don't learn new ways to use power tools. They are retrained in front of a computer; they learn to run the robots that do the jobs they used to do.

The trouble with this apparently successful state of affairs is that the stuff we do best exists nowhere and everywhere at the same time. Some of our most valuable things -- software codes, pharmaceutical processes, car designs, digital movie files -- weigh nothing and, as e-mail attachments, can move at the speed of light. To learn American ideas and procedures is all but the same as owning them. (Unless, of course, laws successfully prohibit their co-option.) In contrast, most of what China makes that finds its way into the world market is physical. The Chinese can borrow and steal the designs to our best products all they want. For instance, 90 percent of all software running on Chinese computers has been pirated and bought openly in stores for around $3 a copy. But if Americans wanted to borrow and steal what China makes, we would have to march in with an army and commandeer Chinese factories and workers. Western powers and the Japanese tried that in the mid-19th and -20th centuries, respectively, and will not repeat the experiment. China, however, can in a sense colonize the developed world simply through careful study and a willingness to go its own way on intellectual-property protection.

If China's commitment to wipe out commercial piracy and counterfeiting were judged by the laws that the country has on its books, the Chinese government would seem to be as strict as any. China has made a great show of cracking down in the past few years. Newspapers and television news programs regularly feature stories about government raids on massive counterfeiting operations. Hundreds of thousands of DVD's and dozens of duplicating machines seized here, a warehouse of CD's there and trucks full of sham designer handbags somewhere else. In December, China passed a much-awaited national law that criminalizes piracy and counterfeiting, allowing courts to jail violators for up to seven years; before, only civil penalties applied. The new law is unlikely to spur enforcement, however. And even if it does send people to prison, that may only prove a boon to the copycat economy. For example, just before Christmas, Sony announced the results of an investigation into Chinese operations that were daily turning out 50,000 fake PlayStation 2 game consoles and accessories: a container loaded with fake parts was found to have visited a prison in Shenzhen just long enough for inmates to assemble the parts. The Chinese themselves take it as given that powerful government interests stand behind the trade in counterfeit or pirated goods. What to foreigners may seem to be an aggressive action against a big piracy ring can look to the Chinese like a
sort of St. Valentine's Day Massacre, where one powerful manufacturer uses police cover to eliminate a weaker one.

As the legal code grows fatter, so, too, do the supply and sophistication of fake goods. The places they are sold no longer look like back-alley stalls but like Main Street retailers. Near Beijing's diplomatic row, two outdoor markets once famous for knockoff fashions have been combined into a large, bright department store-like building with escalators, tailors on site and merchants with business cards, international shipping accounts and full stocks of fake fashions, designer tableware, brand-name musical instruments and, of course, thousands upon thousands of fake Swiss watches. The most common punishment counterfeiters face is the confiscation of whatever products they have in stock. Sometimes a pitiful fine is levied. China's National Copyright Administration cites with much fanfare 52 raids on video shops in 2003, but the total fines amounted to $6,900, or an average of $132 for each offender.

China's lax policies on copyright protection offer the country the advantages of both bread and circuses. Andrew Mertha, a political scientist at Washington University who has worked with Chinese and American officials on Chinese intellectual-property law, summarizes the circus side of things: "If you're the Chinese leadership, do you want people idling around in the street, complaining about how unhappy they are, or do you want them home watching Hollywood movies?" In other words, the government is slow to crack down on the piracy of entertainment products because these serve its social agenda. But is there any doubt that if vendors suddenly found a brisk market for DVD's promoting Tibetan independence or the virtues of Falun Gong, the outlawed religious sect, the DVD business would shrivel up overnight and all those anticounterfeiting laws on the books would find ready application? Indeed, when Sega's new online fantasy sports game "Football Manager 2005" had the gall to suggest that imaginary soccer leagues in Hong Kong, Taiwan and Tibet could be governed locally, rather than by the central government, China's Ministry of Culture banned the game on the grounds that it posed "harm to the country's sovereignty and territorial integrity." Fines reached $3,600.

Because the overwhelming majority of products pirated and counterfeited in China are, for now, sold mainly in China, they provide the Chinese people with "bread" insofar as they make all sorts of other goods affordable. Often, as in the case of medicines and medical devices, some foods, school textbooks and clothing, these counterfeit products are essential goods. Thus, any government crackdown is essentially a tax on China's needy consumers.

Counterfeiters and pirates also serve the country by usurping the foreign technology that China needs to meet its ambitious industrial goals. In 2005, China will most likely be the world's third-largest trading nation, and counterfeiters give the country's increasing number of globally competitive companies the means to compete against powerful foreign rivals that pay for their use of proprietary technologies. In a broader geopolitical context, China's counterfeiters deny the world's advanced economies, especially in the U.S. and Japan, the opportunity to sell to China the valuable designs, trademarked goods, advanced technology and popular entertainment that the Chinese urgently desire but cannot yet produce on their own.

Put another way, China's failure to police industry and to protect intellectual-property acts, in effect, like one of the greatest economic inducements to protect the technology that China needs to meet its ambitious industrial goals. In 2005, China will most likely be the world's third-largest trading nation, and counterfeiters give the country's increasing number of globally competitive companies the means to compete against powerful foreign rivals that pay for their use of proprietary technologies. "China helps distribute technology that has already been paid for by the developed world, often by companies, but also by taxpayers who support the government labs where much of the most important industrial technology begins," says Oded Shenkar, a professor of business at Ohio State University and the author of the recent book "The Chinese Century." "And, seen as a subsidy, this one is a particularly good deal for the Chinese government because it doesn't have to pay for it."

For the most part, China fears no repercussions from its actions because the size and potential of its markets give China an undiminished (for now) power to lure the world's most advanced technology to its shores. For example, China for years has tendered the prospect of large, advanced transportation projects to foreign governments as a way to coax largess and technology from outsiders. When the Chinese government announced that is was considering high-speed magnetic levitation ("maglev") cross-country train routes, Germany and Japan each put together government and business alliances to win future contracts there. The German industrial giants ThyssenKrupp and Siemens formed a partnership to build a nearly 20-mile maglev line in Shanghai to prove that they were up to the job. The line began operating last year while China was said to be considering which of several technologies to use. In December, workers for the German operation videotaped Chinese engineers poking around the maglev train's maintenance building in Shanghai at 3 a.m. one Saturday, apparently in search of confidential information. The manager of the Chinese operation that was a partner of the Germans clumsily excused the prowlers by saying they were merely taking part in a "research and development" exercise. Later that month, the government said that to save money it would eschew foreign designs for Chinese trains and, instead, employ newly developed indigenous maglev technology. Soon China could be exporting maglev trains for half the price Germany or Japan demand.

The generous and optimistic view of China's behavior is that it is a passing phase, and one not all that unusual for countries on the make. European powers once struggled to steal (and even transplant) one another's prime proprietary assets, like Mesoamerican gold, Brazilian rubber and Indonesian cloves. Blue-and-white Delftware was a Dutch attempt to copy China's porcelain works. At the dawn of the Industrial Revolution, American companies paid industrial spies to steal the designs of British machines. American theatrical producers routinely staged foreign operas and plays without permission; publishers sold dubious editions of English novels. More recently, Taiwan circumvented foreign patents and copyrights early in its post-World War II industrialization drive. And countries in Southeast Asia, Latin America, Africa and the former Soviet Union still operate well outside the developed world's norm for intellectual-property protection. Yet no other violators, past or
Countries like Brazil or Vietnam may be as lax about copying as China is, but they do not have the industrial infrastructure or the ranks of skilled scientists and engineers to pull off the more ambitious copies of, say, drugs and automotive vehicles. China, however, has the expertise and infrastructure to reverse-engineer and produce nearly anything. And it has a market large enough to support the enterprise. The Chinese motorcycle industry provides a good example. Honda entered China in the 1980's and soon captured one-fifth of the motorcycle marketplace. But cheaper Chinese imitations appeared, and Honda's market share quickly halved. The company found that staying in China required that it enter into partnerships with some of the very companies copying its bikes. Now, with as many as 100 motorcycle makers in China, the country is the largest such manufacturer in the world, producing 15 million motorcycles a year (half of all new vehicles sold worldwide). Still the copying persists. The Japanese government estimates that of the 11 million motorcycles made in China in 2002, 9 million were imitations of Japanese products.

Oded Shenkar, who has long studied the Chinese automobile industry, argues that China's current regime is an essential factor in the country's ability to produce goods cheaply and get them quickly to market. In the U.S., about $1,000 of the price of an average car goes to pay for that model's product development; that's money the car maker invested over the course of years. Copiers pay none of that and can rush their products to market. "Almost everything you can think of that is made in China has a very low technology investment embedded in it," Shenkar says. "Drugs, DVD's, every trademark, software and whole production lines get copied. Some of the technology is transferred to China by multinational corporations and one way or another finds its way to other producers; others are simply 'borrowed.' The practices feed one another. Why pay for software to run a production line that is itself an unauthorized copy of someone else's technology and processes?"

This sort of technological expropriation allows China to create industries nearly from scratch. Though it costs tens or hundreds of millions of dollars to develop new-model cars and motorcycles, China is home to hundreds of companies that produce the vehicles, many of them small companies with limited sales. "You can't start an automobile company that sells a few thousand cars a year and still pay the $500 million or more it costs to develop a new model," Shenkar says. "Where else in the world could a company that makes 30,000 units compete with one that makes a million units?" The hopeful analogy that compares China with earlier, now-reformed "borrowers" simply ignores the scale of the long-term advantages that both encourage and result from China's copying.

Unless it comes up with a remedy that forces China to change, the United States will have to find its own solutions. Ken DeWoskin, a professor emeritus of Chinese studies at the University of Michigan and a consultant who advises PricewaterhouseCoopers on China, argues that China, as in the Viagra case, will increasingly take on the veneer of an American-style intellectual-property regime while finding ways at every step to assert its interests within that system. "American pharmaceutical companies will be very seriously attacked by China's approach to I.P.,” DeWoskin says. "You can already see how China is changing the rules of the game.” Americans, he notes, pay higher drug prices than consumers in other economies can sustain, all for products made here at home. A result is that we underwrite both our companies and the rest of the world's consumption. How much American consumers will tolerate other kinds of similarly expensive economic nationalism is hard to predict, but DeWoskin says he can envision the U.S. economy slowly but surely adopting such measures, much as Japan has to protect its domestic markets and companies. Japan's economy is structured to support national industries over foreign rivals. Japanese consumers, for instance, typically pay more at home for goods manufactured in their own country than consumers outside pay for Japan's products. Without realizing it, Americans have already tilted toward the Japanese arrangement in pharmaceuticals.

One approach that vulnerable companies trumpet is speeding up the pace of innovation and rushing their products to market before Chinese competitors can catch up. But this solution overlooks the extent to which the Chinese themselves are increasingly skilled at hurrying copycat goods to market. Another approach is to sell legitimate goods at lower prices. Already, China's loose intellectual-property protection has done what years of legal and political pressures on the software and pharmaceutical industries in the U.S. have failed to do: forced powerful American companies to rethink, and often reduce, their prices. Chinese and Indian drugs that fall outside Western-style patent protection are drastically cheaper in poorer countries. Microsoft recently introduced less expensive versions of its software in developing countries where patent and copyright protections are weak (though the company has yet to do so in China).

Another approach to the Chinese intellectual-property regime is to leverage its vitality. The Japanese may be showing the way here too. In September, Toyota surprised the world's automobile makers by announcing that it would join with China's government-owned First Auto Works Corporation to start building its Prius hybrid cars in Jilin, a northeast Chinese province. The innovative Prius is one of the world's most sought-after cars -- why would Toyota bring its hottest technology to China where it is almost certain to be carefully studied and boldly copied? The company says that it just wants to make more cars to meet demand. But an American management consultant who asked not to be identified told me that Toyota could have a deeper strategy that actually counts on Chinese manufacturers to usurp and adapt some of the car's technology. The car's central and perhaps most expensive component is its battery. China has already taken a sizable piece of the small-battery market share quickly halved. The company found that staying in China required that it enter into partnerships with some of the very companies copying its bikes. Now, with as many as 100 motorcycle makers in China, the country is the largest such manufacturer in the world, producing 15 million motorcycles a year (half of all new vehicles sold worldwide). Still the copying persists. The Japanese government estimates that of the 11 million motorcycles made in China in 2002, 9 million were imitations of Japanese products.

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tendencies past American competitors and into the top spot among world car makers -- provided, of course, that Chinese manufacturers do not do to Toyota what they did to Japan's motorcycle makers.

It's a dangerous bargain, becoming partner to a system that's a relentless competitor at the same time. The Chinese government recently announced that it would suspend the purchase of large aircraft in 2005, claiming it wants to cool off an overheating domestic aviation industry. It's just as likely that China wants to give its aircraft industry a chance to catch up with foreign manufacturers like Boeing. If so, the American industrial giant, which has pinned much of its future growth on sales in China and has aggressively transferred technology to China in order to secure its place there, may well lose billions in sales -- and end up with a competitor that can match its current technology and beat it on cost. Last month, China announced the first international sale of 20 domestically produced midsize passenger planes.

*Ted C. Fishman is the author of "China, Inc.: How the Rise of the Next Superpower Challenges America and the World," to be published next month by Scribner and from which this article is adapted.*