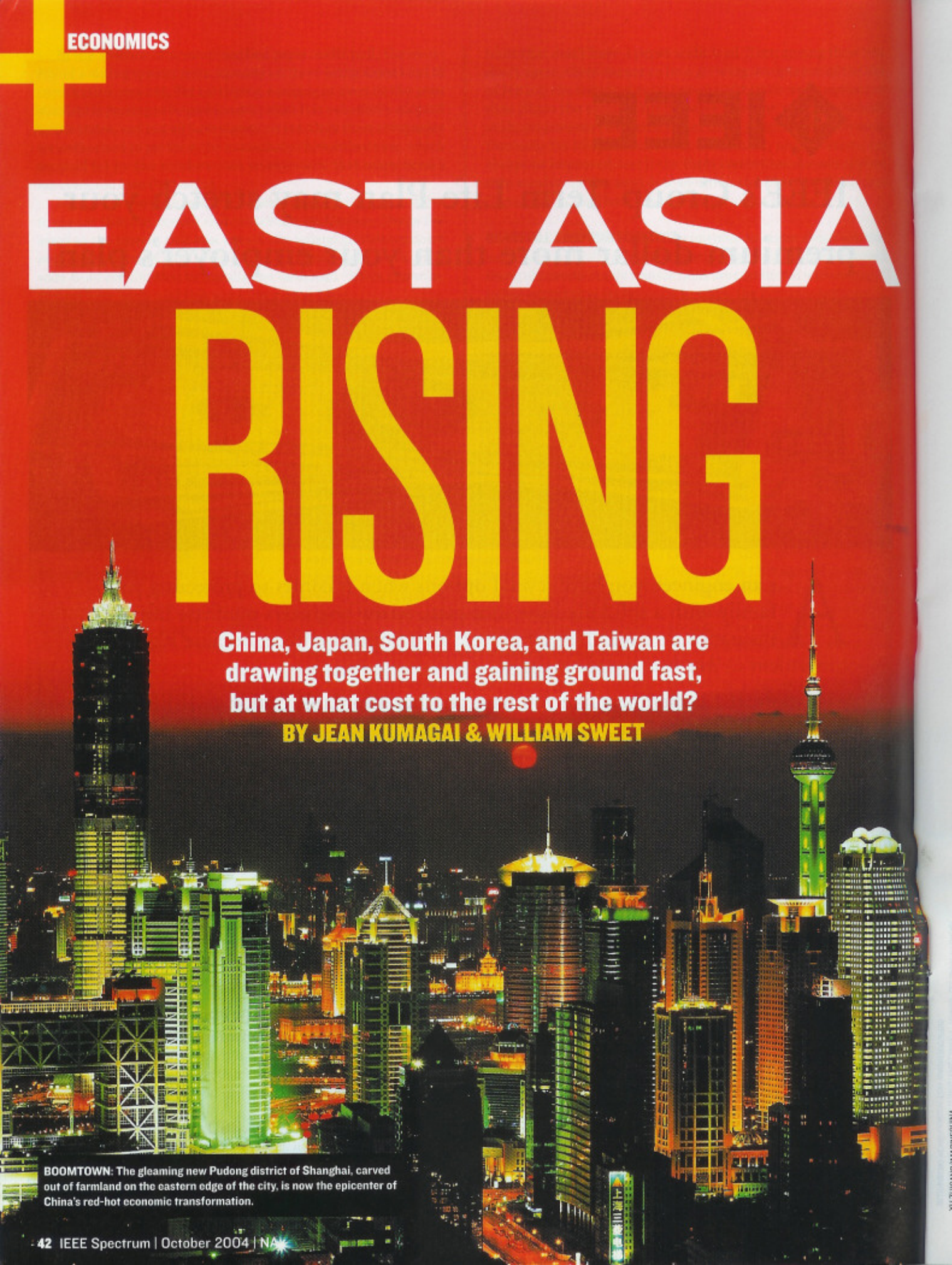


# EAST ASIA RISING

**China, Japan, South Korea, and Taiwan are drawing together and gaining ground fast, but at what cost to the rest of the world?**

**BY JEAN KUMAGAI & WILLIAM SWEET**



**BOOMTOWN:** The gleaming new Pudong district of Shanghai, carved out of farmland on the eastern edge of the city, is now the epicenter of China's red-hot economic transformation.



**IF THE 19TH CENTURY** belonged to Britain and the 20th century to the United States, the 21st century will surely be East Asia's. Already, South Korea, Taiwan, the eastern industrial areas of China, and Japan form an increasingly integrated economic bloc that rivals both Western Europe and the United States. Within decades, the region will become the world's dominant economic force.

The effects of East Asia's growing weight in world affairs are felt everywhere, whether by the DaimlerChrysler assembly line worker in Germany who's asked to give up his cherished hourly break or the Wal-Mart shopper in Texas who can now buy a Chinese-made DVD player for US \$30 [see photos, "Made in Asia"].

Adjusting to East Asia's ascendancy is another matter entirely. The situation is reminiscent of that of a century ago, when the Europeans and the Japanese failed to acknowledge the rise of the United States, resulting in miscalculations that contributed mightily to the outbreak of two world wars. In Europe today, a sense of deep unease is pervasive. While the war against Iraq and strained relations with the United States would seem the cause for such anxiety, in fact, incumbent governments are in trouble throughout Europe, whether they supported the war or not. The pattern suggests that other forces are at work, and the smart political money says that the most important force is East Asia.

What's at issue is whether the European nations can still afford their generous welfare systems and labor benefits when Chinese factory workers earn on average a tenth of what their German counterparts make. And it's not just the production workers. Earlier this year, the chief executive officer of Munich-based Siemens AG, Germany's foremost engineering company, announced plans to hire 1000 Chinese engineers and invest about \$1.25 billion in the People's Republic.

In the United States, although political debate this year has been dominated by Iraq and terrorism, the profound issues raised by Asia's economic rise are starting to get some attention. On 8 July, when U.S. trade representative Robert B. Zoellick announced he had persuaded China to phase out a tax advantage for its semiconductor manufacturers, he did so under a big banner emblazoned with the words "Real Results"—a George W. Bush re-election slogan.

The Democratic Party's presidential candidate, Senator John F. Kerry, has meanwhile taken the Bush administration to task for tolerating China's "predatory currency manipulation," for allowing the U.S. trade deficit with China to balloon to roughly \$125 billion in 2003, and for being "asleep at the wheel" while China pirates U.S. software, optical discs, and other technologies and deprives its workers of rudimentary rights.

To assess what's at stake in East Asia, especially in terms of the technology development that has been the driving engine of the region's ascendancy, *IEEE Spectrum* convened a panel of policy experts and engineers in Washington, D.C., in June [see sidebar, "Panelists and Their Affiliations"]. Five panelists were IEEE members, three of them IEEE fellows. The panelists were selected partly to exploit regional and technical expertise but also to reflect the diversity of opinion found among those concerned about the implications of East Asia's rise. As a result, there were few, if any, points on which all parties agreed; even the definition of the word *export* was debated. What follows is a condensed rendering of the panelists' perceptions, thoughts, and expectations for East Asia.

**GIVEN TAIWAN'S TINY SIZE**, lack of natural resources, and often precarious political position, its phenomenal expansion in the high-tech arena is the most striking among Northeast Asia's tech titans. In a period of just 40 years, the country has moved from a sleepy, agricultural economy to the builder of some of the world's leading tech industries. It has accomplished that feat despite deep divisions between the native Taiwanese and the Chinese nationalists who came to the island with Chiang Kai-shek in 1949 and despite the diplomatic isolation imposed by mainland China.

Most notable among Taiwan's technology success stories are its chip foundries, Taiwan Semiconductor Manufacturing Co.

(TSMC), in Hsinchu, and United Microelectronics Corp. (UMC), in Taipei. Between them, they now control three-quarters of the \$20 billion global market for chips made under contract. Taiwan also boasts the world's largest notebook-computer manufacturer, and the nation's thin-film-transistor liquid-crystal display makers are now second in sales only to South Korea's. Drawn by Taiwanese expertise as well as government incentives, a number of multinational tech firms, including Microsoft, Intel, and IBM, have established R&D centers in Taiwan's renowned science parks.

What has spurred this stellar growth? For one, the strongest culture of entrepreneurship in Northeast Asia, if not the world. "In Taiwan, everyone wants to be their own boss, everyone wants to be a CEO," noted Robert Y. Lai, a former TRW Inc. executive and now a consultant on Taiwan-related security and industry issues. "There's a joke that if you throw a stone on a busy street in Taipei, the chance of hitting a CEO is very good." As a result, he said, small and medium-size businesses thrive there in a way that they don't in South Korea or Japan.

Another difference that sets Taiwan apart is that it doesn't have the high level of government-funded R&D seen in Japan and South Korea, noted Michael G. Pecht, a professor at the University of Maryland who has written extensively about the Asian electronics industries. "In Taiwan, it's survival of the fittest," he says.

Taiwan's adversarial relationship with mainland China, ironically, has tended to work to Taiwan's advantage. "Thanks to political pressure from the People's Republic of China, Taiwan cannot get international loans," said Lai. "The result is that the Taiwan government has no foreign debt, period. And it has huge foreign deposits." Those assets helped Taiwan weather the financial crisis that whipsawed through the rest of Asia in 1997–1998, Lai noted.

But how long can Taiwan remain a high-tech leader? Even more so than South Korea and Japan, it now leans heavily on China as both a market and a manufacturing base. Tens of thousands of Taiwanese-owned businesses have gravitated toward China's eastern industrial regions [see photo, "Boomtown"], and an estimated 300 000 Taiwanese now work there, with another 15 000 to 20 000 joining them each year. Many of these migrants—so numerous they now merit their own name, *taishang*—are either professionals or skilled workers.

Their strained relations notwithstanding, China and Taiwan increasingly depend on each other economically, and that fact greatly complicates cross-strait politics.





**MADE IN ASIA:** Workers assemble DVD player components [top] at a factory in China's eastern province of Jiangsu. Devices built here are exported and sold at Wal-Mart, among other places. South Korea's Hyundai Motor Co. [second] produced its first car just three decades ago, but earlier this year J.D. Power and Associates rated its cars as the world's most reliable. In a clean room at Taiwan Semiconductor Manufacturing Co. [third], technicians inspect wafer quality. The world's largest contract chip maker, TSMC will open its first wafer fab in China later this year. At an NEC factory in Saitama, Japan, a worker assembles cellphones [bottom].



China continues to maintain a policy aimed at "reuniting" Taiwan with the mainland by 2020. The Taiwanese, meanwhile, are divided over the question of independence; the former ruling party, the Kuomintang, generally supports reunification, whereas the new regime, led by President Chen Shui-bian, leans toward the two countries' going their separate ways.

Fearing erosion of its industrial base, the Taiwanese government has tried to limit investment in China—by restricting its chip makers from moving their most advanced technologies to the mainland, for example. But there is little the government can do to staunch the brain drain to China. "There are Taiwanese who worked for Motorola or Intel for 10 years or so and gained experience in the U.S. semiconductor industry, then spent 3 to 5 years at TSMC and UMC, and now they're in China," Pecht says.



Taiwan's TSMC last spring sued its main Chinese competitor, Semiconductor Manufacturing International Corp., in Shanghai, claiming that the company hired away key employees who disclosed proprietary information about TSMC's chip-making technology. The legal spat has not deterred TSMC from seeking, and winning, approval from the Taiwanese government to start producing less-advanced 8-inch wafers at its first mainland fab, in Shanghai. The plant is scheduled to begin full-scale production by the end of this year.



#### CHICAGO ARCHITECT DANIEL BURNHAM'S

famous motto, "Make no small plans," could just as well be applied to South Korea. In utter ruin 50 years ago and barely rising to the level of a subsistence farm economy, it has achieved the same standard of living in a half century that countries such as Spain took two centuries to reach. No other nation has grown so fast and accomplished so much starting with so little.

South Korea today makes half the world's computer memories, and its top companies—notably Samsung Group and LG Group, both in Seoul—have emerged as the global leaders in

business-critical fields like cell telephony and flat-panel displays. Hyundai Motor Co., also in Seoul, which built its first clunky automobile just 30 years ago, incredibly ranked No. 1 in a recent U.S. survey of car reliability. "The country was virtually bankrupt [after the Asian financial crisis of 1997], but now its top technology companies are dominant or at least very strong in the world," observed panelist Paul F. Liao, chief technology officer for the U.S. arm of the Japanese electronics giant Panasonic/Matsushita Electric Corp.

Liao pointed out that South Korea has succeeded in recent years by targeting the U.S. market—not China's. For example, it adopted and then adapted one of the U.S. standards for cellphones so that its companies could design and manufacture for both the U.S. and South Korean markets.

South Korea, like Japan, received enormous amounts of U.S. aid for reconstruction, and "that had a tremendous influence on the development of technology," observed panelist Linda Geppert, *IEEE Spectrum's* senior technical editor and a semiconductor specialist. Just as the big industrial conglomerates in Japan—the *keiretsu*—were able to foster rapid transfer and copying of U.S. technology, the South Korean conglomerates, known as *chaebol*, drew on Japanese technology.

But in the last several years, South Korea, in contrast to Japan, has been weakening the *chaebol's* control over the economy and now is attempting to open its markets. Mainly to reassure investors that money put into the country will not disappear without a trace into some old-boys' network, South Korea's reform government has sought to strengthen corporate governance and enforce internationally accepted accounting and risk-management rules, while at the same time smoothing relations with the country's militant trade unions.

Panelist Tim Shorrock, a journalist specializing in Korean and Japanese politics, emphasized that these corporate reforms would never have happened without the thoroughgoing



democratization of South Korean society, including the widespread use of the Internet for grass-roots political organizing. South Korea has probably the world's highest rate of broadband penetration and a young, educated, and highly motivated population. Shorrock pointed out that although the same conservative regime has been pretty much in charge in Japan since 1955, two past presidents in South Korea have been jailed for human rights abuses, an emphatic repudiation of the thinly veiled dictatorship that governed the country for nearly 50 years.

In national elections earlier this year, the reform Uri party won full control of the South Korean government, and in April, the Uri president was reinstated following a constitutional challenge from the political forces that for decades had been aligned with the country's dictatorship. With that, the changing of the guard seemed complete.

Taking advantage of the higher standing it has acquired with political democratization and economic opening, South Korea's stated aim now is to become a hub for Northeast Asian commerce—the go-between for Japanese, U.S., European, and Middle Eastern companies seeking to do business in China. The hope is that many more multinationals will

set up shop in South Korea and partner with local firms, getting various kinds of encouragement and breaks from the government.

Can that strategy succeed? Obviously, South Korea's assets are prodigious. Besides a spectacular economic track record, South Koreans benefit among their Asian neighbors from not being Japanese (whose past empire-building still rankles some), and they have taken advantage of cultural affinities to establish big bases of operations in China. The country is constructing an impressive platform for foreign multinationals outside its new international airport at Incheon, already one of the world's busiest, and it is setting up a similar enclave for companies specializing in digital media in Seoul itself. In another large project, Samsung is constructing a "Crystal Valley" in South Chungchong province, to develop semiconductors, flat screens, and the like. And a new high-speed train, inaugurated last April and based on

France's TGV, connects Seoul in the far Northwest to Pusan at the peninsula's southern tip, 400 kilometers away.

But South Korea is not the only aspiring Asian hub, as panelist Liao noted. Singapore's ambitions are similar, and companies like Motorola and Liao's own Panasonic have launched big operations in China directly, without feeling a need to work through third parties.

As for the country's drive to improve

America Foundation, China annually consumes 250 million tons, but produces only 210 million tons, which means that if you, too, are in the market for steel, you're now paying a higher price for it.

Of course, it's not just a matter of resources and materials. Increasingly, in the last few years, China has become a favored base for assembly of nearly every kind of export product, from plastic party favors to cellphone chip sets. The countries most affected are its immediate neighbors, Taiwan, South Korea, and, above all, Japan. As panelist Shorrock put it, "China is now to Korea what Korea was to Japan 25 years back. [The Chinese] are buying a lot of Korean technology, and they're manufacturing it into finished goods and exporting it to places like the United States." By 2001, China already was South Korea's largest investment market and by 2002, its biggest export market.

As China has built relations with foreign partners, and as its importance has grown as an export market, it has become increasingly capable of muscling multinational companies into disclosing proprietary information about their advanced technology. What's not so clear is whether China will soon be challenging the advanced industrial economies in every branch of high technology—and whether anything can or should be done about it. Those questions are wildly controversial: members of the panel disagreed sharply about whether the industrial countries should simply resign themselves to China's ascendancy or try to resist, contain, and channel it.

The Chinese themselves don't think they're getting much of the advanced technology. While Americans have complained in the last year about their jobless economic recovery, Chinese have bemoaned what they call a "headless" or "brainless" boom, said panelist Fei-Yue Wang, a University of Arizona specialist on intelligent transportation, who has been involved in the Chinese government's long-term technology planning.

Willie W. Lu, a wireless technology specialist with Stanford University, wondered why any company would agree to turn over critical technology to a Chinese partner. Given China's inadequate legal system, there's no sure way to protect one's intellectual property once it's there, he noted.

## CHINA CLOSES SEMICONDUCTOR TECHNOLOGY GAP

Feature size (micrometers)

Source: Michael G. Pecht, University of Maryland

	1995	1999	2001/2002	2003
United States	0.35	0.18	0.13	0.10
China	3.00	0.35	0.18	0.13



Since 1995, Chinese chip makers have improved their chip-etching capabilities by more than an order of magnitude. By 2003 they were able to handle line features down to 0.13 micrometers, closing in on their U.S. counterparts.

corporate governance, there's still a long way to go, warned panelist John Rutledge of Rutledge Capital, an investment firm. He advised, "Don't hold your breath."

### ASSEMBLE A GROUP OF ASIA TECHNOLOGY

experts, and China inevitably begins to consume almost all the oxygen in the room. The reasons are not hard to fathom.

In the most basic raw materials, like oil, cement, and steel, it's China's gargantuan demand that is moving the world's markets. Ask why U.S. drivers are paying the highest gasoline prices in decades, and an important reason is China, which is about to displace Japan as the world's second biggest oil importer, behind the United States. Ask why people building homes in south Florida are having to wait months to get their foundations poured, and the answer is that there isn't enough concrete—it's being bought up by China. In steel, observed panelist Steven C. Clemons of the New



China may seem a ferocious, unstoppable tiger, but viewed up close, said Lu, it is in many ways a sickly beast. Many of its problems are well known, at least to China watchers: its troubled monetary system, poor lines of division between state entities and the private sector, pervasive corruption in some provincial and local governments, water and energy scarcity and environmental degradation, creeping unemployment, and the deterioration of its Mao-era health-care system and other social safety nets.

Of all the serious problems, Lu puts inadequate education in first place. Though Chinese universities graduate about 325 000 engineers every year, 80 percent of the population have little more than a primary education, Lu says. The country as a whole is "like an overnight billionaire" that lacks the sophistication and knowledge to manage its own affairs. "The whole country needs to go back to the academy," Lu concludes.

**PANELIST ALAN TONELSON**, a policy analyst and D.C. lobbyist, who makes it his business to highlight China's impact on employment and growth in the United States, sees things differently. He emphatically rejects the notion that China is doomed to perpetual backwardness—and he sees the implications as ominous for all advanced industrialized countries. "American technology competitiveness vis-à-vis China has been eroding rather significantly, and the pace of this erosion is going to speed up dramatically because it's the kind of process that feeds on its own momentum," he says. "As increasingly sophisticated manufacturing flows into China, the R&D, engineering, and design functions associated with that manufacturing are going to flow to China, too."

Pecht, of the University of Maryland, provides evidence to support Tonelson's claims. Nine years ago, Pecht says, U.S. semiconductor makers could etch chips with features as small as 0.35 micrometers, while their Chinese counterparts could manage only 3  $\mu\text{m}$ . Last year, the United States could inscribe features of 0.10  $\mu\text{m}$ , but China already could do 0.13  $\mu\text{m}$  [see chart, "China Closes Semiconductor Technology Gap"]. In 10 or 15 years, China's semiconductor industry has gone from being five generations behind the state of the art to being one generation behind, observes Tonelson.

He lays partial blame for the United States' eroding lead on multinational companies, which are too eager to exploit China's low production costs and repressive labor system. The rest of the blame goes to a U.S. administration that he sees as uninformed, uninterested, and inactive. Most of Tonelson's major points were sharply disputed by fellow panelists, but Clemons, of the New America Foundation, supports him and goes even further, arguing that China's economy is a bubble—in effect, a disaster waiting to happen to the rest of the world.

Clemons suggests that it is time for the United States to enforce restraint, by, for

investor, who dismisses any thought of stopping China's ascendancy, which he sees as a kind of renaissance. For thousands of years, he observes, China was the most advanced and most powerful country in the world, and now it is simply reclaiming what it sees as its rightful place. Rutledge argues that as the cost of moving capital around the world has gone to virtually zero, "Capital will go where capital will go."

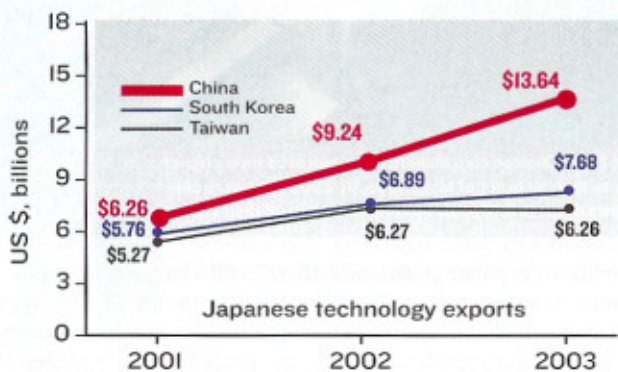
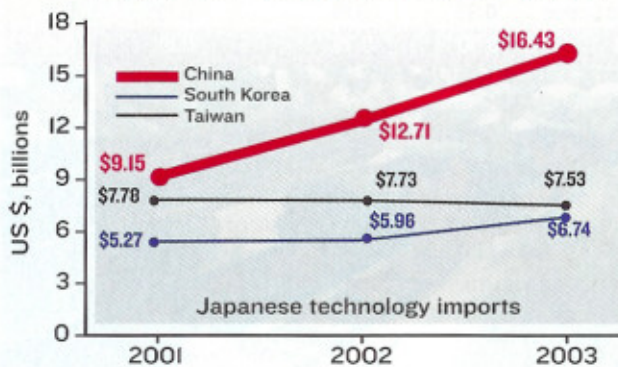
**AND WHAT OF JAPAN?** Though still by far the region's most industrially advanced country—with a per capita gross domestic product five and a half times that of China—Japan has watched its East Asian neighbors blossom while its own economy has barely budged for more than a decade. Only this year has Japan finally made some real, if modest, gains; in July the government said it expected the economy to grow by 3.5 percent this fiscal year, the fastest pace since the mid-1990s.

Japan's predicament has been particularly painful given that, right up until the collapse of its stock market and banking system in 1990, it seemed poised to eclipse the United States as an economic superpower. Japan's meteoric rise during the 1970s and 1980s, which hinged on the superior quality of its manufacturing and technology, also helped seed the subsequent successes of South Korea, Taiwan, and now China.

Now that Japan appears to be recovering, the obvious question is: how durable will this recovery be? Has the government truly reformed its financial system and rebuilt its industrial structure? Or, as panelist Clemons puts it, "What is Japan getting right, and what is it still getting wrong?"

In broad strokes, the Japanese model has been characterized by government-nurtured and -protected industry, whose most powerful agent was the Ministry of International Trade and Industry (MITI), noted panelist Danielle Kriz, a Japan trade expert in the U.S. Commerce Department's Office of Technology and Electronic Commerce. As the chief architect of the country's industrial strategy, MITI fended off international competition, mediated industry disputes, and aided in licensing foreign technology. In the process, it built globally competitive industries in telecom, computers, electronics, automobiles, and many other fields.

## JAPAN'S TRADE WITH CHINA



Japan's exports to China more than doubled from 2001 to 2003, and its imports from China also leapt up; meanwhile, trade with South Korea and Taiwan barely budged.

Source: Japan Customs and Tariff Bureau

example, removing tax incentives that encourage U.S. companies to move production offshore. China's situation is "so potentially disruptive to the global economy that I tend to favor pulling the plug," he says.

Tell a bunch of electrical engineers to pull a plug, and you can count on a lively response. What plug? Where is it? Do we really control it? And even if we could pull it, wouldn't the collateral damage resulting from the power loss be unacceptable? The University of Arizona's Wang hints that attempting to check China's growth would risk sparking a war.

The predisposition of the engineers on the panel was to agree with Rutledge, the



But Japan's bureaucratic decision making eventually backfired in the 1990s, as telecom deregulation in Western Europe and the United States allowed new players to enter those markets and spurred faster consumer adoption of information technology. Meanwhile, the Internet boom and e-commerce took off throughout the Western industrialized world. Neither the Japanese government nor its large industry cartels were nimble enough to recognize the significance of the new technologies.

By 2000, what the government *did* recognize was Japan's eroding technology base, which officials viewed with "a sense of crisis," Kriz said. They responded, in a manner reminiscent of the 1950s-era MITI, by passing a new set of laws and policy, whose aim was to make Japan the most advanced IT country by 2005. The programs combined regulatory reform, increased competition, and projects to build out the Internet; as a result, the 15 million Japanese who now have broadband service enjoy the world's cheapest rates and among the fastest connection speeds (less than \$40 per month for a 45-megabit-per-second line; in the United States, a connection only one-tenth as fast costs more).

But many of the problems that precipitated Japan's last collapse—the unhealthy level of government-industry collusion, for instance—haven't been resolved, adds the New America Foundation's Clemons. "There's still a kind of village mentality when it comes to promoting Japan's own, and resisting or excluding others," he says.

For example, when electronics giant NEC Corp., in Tokyo, began shopping around its plasma display business earlier this year, MITI's successor, the Ministry of Economy, Trade, and Industry, persuaded the company to sell to a domestic company rather than let it go abroad. "There are a few examples of successful foreign investment in Japan today, but it's still at the tokenism level," Clemons concludes.

Like Korea and Taiwan, Japan now views China as a vital trading partner, a base for manufacturing, and a competitive threat. Much of Japan's recent growth derives from trade with China. From 2001 to 2003, for example, Japan's technology exports to China more than doubled, while its technology exports to South Korea and Taiwan grew only modestly [see graphs, "Japan's Trade With China"]. At the same time, Japanese companies clearly benefit from cheaper labor costs in China.

Kriz believes that, for now at least, the Japanese are doing a good job of keeping their core competencies in Japan. Those competencies include intelligent networks, advanced

ceramics and other materials, and some of the sophisticated manufacturing methods for LCDs, she says.

The Japanese still dominate the consumer electronics market, especially at the higher end, Panasonic's Liao noted. They retain nearly three-quarters of the DVD recorder market and 84 percent of the digital camera market. And the merging of computers, communications, and consumer electronics, resulting in function-laden gadgets like cellphone-cameras and PDA-MP3 players, has been a boon. "Japanese companies need to focus on those things that they do best," Liao said.

In the long term, though, China will certainly develop the engineering know-how and the marketing savvy to build even the most advanced products, several panelists pointed out. How will Japan, and the rest of the industrialized world, compete then?

### AS PERHAPS THE MOST SIGNIFICANT ISSUE

in 21st-century geopolitics, East Asia's economic ascendancy prompts vital questions. Would it be rational policy or imperialist meddling for the United States and Europe to try to contain and control the eastward flow of capital and jobs? For that matter, would an attempt to rein in China's breakneck growth only precipitate global recession, or even war? Can the East Asian nations take increasing responsibility for working out their own problems, or will political turmoil among them short-circuit their growing cooperation? Is China's red-hot growth in fact creating another economic bubble that will drag down its trading partners when the bubble inevitably bursts?

On these matters, the panelists disagreed sharply, as indeed all Asia watchers do these days. There are no absolute answers, and the confluence of factors acting within the region and from the outside makes any long-term forecasting impossible.

"There used to be the joke that the United States fought the Cold War and Japan won," Clemons says. "The new joke is that the United States is fighting the war on terror, but China is winning." There may be something to that: while the United States and its military allies grapple with difficult situations in Afghanistan and Iraq, China and its East Asian partners are now perceived as an oasis of stability—and they are taking every opportunity to advance their agendas. If the United States continues to be distracted by what it sees as its global responsibilities (and what critics see as global obsessions), it may one day find it has won some battles but lost the struggle that counts most. ■

## PANELISTS AND THEIR AFFILIATIONS

**Steven C. Clemons** • Executive vice president of the New America Foundation in Washington, D.C. Cofounded the Japan Policy Research Institute, Cardiff, Calif.

**Linda Geppert (M)** • Senior technical editor, *IEEE Spectrum*. Worked at the IBM Thomas J. Watson Research Center, in Yorktown Heights, N.Y., as a research scientist for 17 years.

**Danielle Kriz** • Senior international trade specialist, U.S. Department of Commerce, in Washington, D.C. Co-manages the U.S.-Japan Information Technology Working Group.

**Robert Y. Lai** • A national security consultant and a director of Taiwan's National Applied Research Laboratories. Worked previously as a senior project engineer at TRW Inc.

**Paul F. Liao (F)** • Chief technology officer, U.S. Division, Panasonic/Matsushita Electric Corp., in Secaucus, N.J. Named IEEE fellow for his contributions to nonlinear optics and laser spectroscopy.

**Willie W. Lu (SM)** • Consulting professor at Stanford University in California. Is a specialist in software-defined radio, open wireless architecture, and fourth-generation mobile communications.

**Michael G. Pecht (F)** • Engineering professor at the University of Maryland, College Park, and the author of 18 books on electronic products development, including a series on the Asian electronics industry.

**John Rutledge** • Chairman of Rutledge Institute for Capital & Growth; of Rutledge Capital, a private equity investment firm; and of Rutledge Research. Was a principal architect of U.S. President Ronald Reagan's economic program in 1980–1981.

**Tim Shorrock** • Independent journalist specializing in Korea and East Asia. Covered U.S.-Asia trade for *Journal of Commerce* and *Business Korea*. Is well known for his reporting on South Korea's May 1980 military coup.

**Alan Tonelson** • Research fellow, U.S. Business & Industry Council Educational Foundation, in Washington, D.C. Held a visiting fellowship at the Henry L. Stimson Center to study security and economics issues in China in 2002–2003.

**Fei-Yue Wang (F)** • Professor of electrical engineering at the University of Arizona in Tucson and director of its advanced research program in complex systems. Served as an advisor on long-term technology development to the Chinese Academy of Sciences.