THE OHIO STATE UNIVERSITY

memorandum

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To: FS&T Faculty

From: Ken Lee Ken Lee

RE: US News and World Report June 7, 2004

I enclose this recent article, in case you missed it. This treatise does not mention the third frontier but that may be the only omission. Our challenge is to expunge agriculture R&D from its old economy image.

By the way, page 39 mentions Healthy Hearth, a product of this faculty now on sale at the Andersen's General Store.

BY JODIE T. ALLEN

ELECTION 2004 THE ECONOMY

COLUMBUS, OHIO—With spring in full swing, Ohio looks more green than purple. Purple, though, is the color pundits paint the state, a presidential battleground that could go either Bush-red or Kerry-blue come November 2. Yet the Buckeye State, the often-noted harbinger of national preference in picking presidents, is as much a battleground in the economic as the political sense. For here the forces of the "old economy" are in full contention with the promises of the new.

You can travel through 100 years of industrial history within the space of a few miles from the center of this city, itself at the epicenter of this year's battle for control of the White House. Start, for example, at Columbus Steel Castings, the renamed, once bankrupt Buckeye Steel, from which, as its president in 1908, Samuel Prescott Bush launched the family fortune that still helps sustain his great-grandson, the present Oval Office incumbent. Despite the computer-controlled machinery, to the untrained eye the maelstrom of fiery furnaces

MOLDING A NEW

While politicians battle for its votes, Ohio seeks to recast its economic future while staying true to its heartland history

PHOTOGRAPHY BY SCOTT GOLDSMITH FOR *USN&WR*

TWO FACES. The factory floor at Columbus Steel Castings; experimenting with the world of algae at Phycotransgenics (left)

ECONOMY

looks much as it might have when the plant was built a century ago. Then drive a few miles northwest to the skylighted corridors of the Business Technology Center, a former mattress factory that now houses 30 "incubators"—high-tech start-ups exploring the outer limits of technology. Both are vital parts of a state struggling to adjust to a globalized economy while preserving vestiges of the industries that were once the basis of its fortunes and its wellsprings of ingenuity and employment. "Clearly, if there's anything true about an economy, it's that it's constantly in transition," says Bruce Johnson, Ohio's state director of development. "I think Ohio is a microcosm of what's going on nationally. We're grounded in manufacturing and agriculture, but we're fast transitioning into technology and services."

As the nation's third-largest manufacturing state, Ohio has suffered more than its share of regrowing pains. Between March 2001 and March 2004, the state lost 272,300 jobs, 238,100 in manufacturing. The latest blow: Last month the Timken Co., a global manufacturer of bearings and alloy steels, said it will shutter three plants in Canton that now employ some 1,300 workers.

Still, there are signs that the state is catching the new wave of growth churned up by the rejuvenescent national economy. The Timken downer was followed by a fast upper: Whirlpool confirmed plans to invest as much as $145 million in its Ohio facilities, saving 2,000 local jobs. New data also showed Ohio payrolls up by 34,800 jobs since last December. Even in the southeastern, Appalachian region of the state, a uranium enrichment plant, a biotech start-up, and a nascent tourist industry aim to provide a fresh start for that chronically depressed area (story, Page 40).

State officials aren't the only ones talking up Ohio's outlook. "The last 90 days have been *much* better than the previous 900," says Francis Price, CEO of Q3 Stamped Metal on Columbus's south side. Most of the metal Q3 stamps goes into heavy trucks, and when durable goods orders rise, "that's what moves them," Price says.

At Ohio State University–Columbus, Allen Miller, chairman of the industrial and systems engineering department, points to many advantages the state retains. "There is still an enormous amount of process design and engineering going on in Ohio. It may be implemented overseas, but Intel is doing its first-generation chip designs here." Miller says virtually all of his department's graduates still find jobs, though offers are "fewer and later."

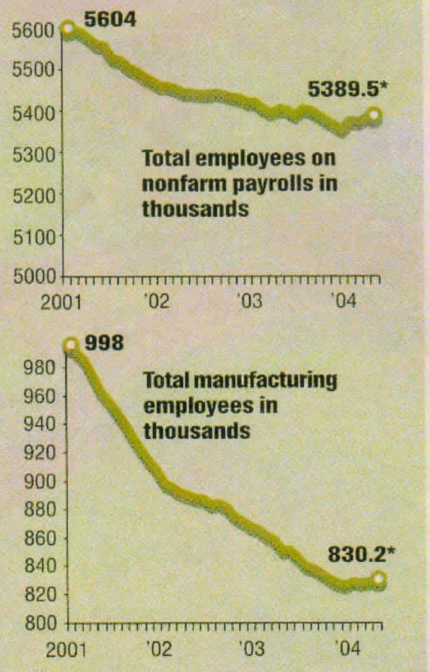
By many measures, Ohio is morphing into the image of the larger service-oriented economy. While "industrial history is embedded in their minds," says Johnson, "people here have mostly transitioned." The state's biggest employer? Wal-Mart (though Johnson points out that's because General Motors spun off auto-parts maker Delphi). Next in line: the supermarket chain Kroger, Cleveland Clinic Health System, and Wright-Patterson Air Force Base.

Miller also points to another salient feature of Ohio's new economy—the blurring of lines between manufacturing, information technology, and services. "It's not so clear where manufacturing starts and stops these days," he says, noting that one of his graduates is making insulated packets for fast food.

ROD LITTLE – USN&WR

A HARD HIT ON JOBS

In recent years, Ohio has suffered severe job losses—most of them in its still-proud manufacturing sector—highlighting the debate between Republicans and Democrats on the economy.



* Preliminary figures
Source: Bureau of Labor Statistics

A case in point: Cardinal Health, headquartered on a leafy campus in suburban Dublin, northwest of Columbus. Even before its recent $1.6 billion buy-up of Alaris Medical—60th in a string of acquisitions that transformed the onetime food wholesaler into a global seller and distributor of health products and services—Cardinal ranked No. 17 on *Fortune*'s list of largest U.S. companies. Cardinal gets counted as part of the fast-growing health-care sector, but "in a major sense we're also in manufacturing, technology, and transportation," says Jim Mazzola, vice president for corporate communications.

In addition to running a truck fleet that makes more than 35,000 deliveries daily to drugstores and hospitals, Cardinal has developed a patented quick-dissolve capsule formula, manufactures surgical gloves and aneurysm clamps, produces and packages pills for firms like Wyeth, develops automated pill dispensers for hospitals, runs a pharmacist temp service, and operates a network of "nuclear pharmacies" that deliver radioactive material with precisely the required half-life. Still, while its central location makes Columbus an ideal distribution hub, Mazzola notes that Cardinal's "future is not tied to Ohio."

Incubating. One way the state hopes to make such ties more binding is through its Edison Technology Centers. The largest of these, the Business Technology Center, located on OSU's sprawling campus, works closely with the university as well as with nearby Battelle Memorial Institute and many private firms. BTC provides financial and managerial help to infotech, biotech, and advanced materials ventures, and shares space with Omeris, which operates bioscience incubators. Over 30 incubators have successfully "graduated" into stand-alone firms such as Entrotech, which provides adhesives for computer disk drives.

David Cattey, BTC's executive director, proudly displays the mind-boggling mix within his gleaming-white facility with its neoindustrial exposed pipes and brick walls—"kind of like the stage of most of these companies," he remarks. Here an Aetion Technologies lab models artificial intelligence networks; over there, AquaLinks software developers track the peculiarities of large bodies of water. Turn a corner and find Phylogeny, a provider of tissue microslides used in

BRIDGE. **Q3 Stamped Metal's Terrence O'Donovan looks out for new opportunities.**

gene identification. IRIS uses infrared imaging systems to reduce the "number of pricks per patient" in intravenous injections; Excera works on developing more-resilient materials for body armor—only one of many Ohio enterprises to benefit from the military buildup. And down the hall is Healthyhearth, out of whose ovens emerges a soy-enhanced loaf, headed for test trials in supermarkets in July. "This one actually tastes like bread," boasts Cattey.

In the early years of the state's Edison program, "the perception was this wasn't working because of a scarcity of venture capital in Ohio," says Pat Valente, deputy director of the technology division of Ohio's department of development. "Over the last three years we have begun to turn that corner."

Insourcing. Much of the needed capital has come from abroad. Honda's various plants northwest of Columbus are the flagship examples (story, Page 42). But state officials also point to the more than 970 other foreign-owned corporations that have been attracted by magnets such as the Cleveland Clinic system, the NASA Glenn Research Center, Wright-Patterson's labs, and OSU's manifold resources. Another prime attraction is the Edison Welding Institute. One of only two in the world, the institute was founded in 1984 with mostly state money but now draws 93 percent of its funds from clients around the globe. "We're a one-stop shop for all your welding and joining needs," says EWI's president and CEO, Theodore Ford.

If you're thinking old-time metal-to-metal arc welding, think again. EWI will join three different composites needed for your tiny cardiac pacemaker, stress-test your "fatigued" steel, clean your fuel injectors, validate your robots, repair your pipelines, fuse your fuel cells, and earthquake-proof your concrete building. It has also figured out how to join the steel base of the Navy's next generation destroyer to a superstructure of composite materials—a weight-reducing innovation that in addition minimizes the ship's radar signature. "Microchips to battleships is our motto," says principal engineer George Ritter.

Innovation is not, however, confined to high-tech wizardry. At Lang Stone Co., a fifth-generation family-owned supplier of building and landscape materials, Vice President Joan Coffman First says she has trimmed inventory to the hottest-selling materials and tightened up on staffing: "We're lean and mean, but we're still like one big family." And she's importing more of her material from Asia. "They have the quality at low price," First says.

But China, Asia's now dominant force, also plays a negative role in Lang Stone's current upturn. As container ships pile up at China's underdeveloped port facilities, Lang waits months for limestone from India. A steel shortage, while good for what remains of Ohio's industry, also makes it too expensive to build more containers. "And when your container finally comes, Homeland Security may charge you $400 to $600 for X-rays," First laments. Columbus Steel—which specializes in casting custom-built parts for railway cars and mass transit carriers—shares that problem. It needs to import zirconium from South Africa, but, complains the firm's president and chief operating officer, Craig Holman, "the price has doubled because the ships are all sitting in a harbor in China."

Ohio employers express conflicting

views of China's growing might. Many, like Holman, have traveled there. Sally Hughes, president of Caster Connection, a $10 million firm she started by selling office chair casters out of the trunk of her car in 1987, recently checked out Chinese suppliers and competitors. The factories she saw were "antiquated," but much of the product was of good quality. "It's becoming more competitive," she worries, "every way I turn."

Still, there are natural limits on offshoring, such as the desire for shorter, more-secure supply chains. Foreign suppliers can also lead to quality problems. A competitor of Columbus Steel moved its operations to Mexico in the mid-'90s. The parts proved defective, the firm went bankrupt, and now Columbus has contracts to make replacements.

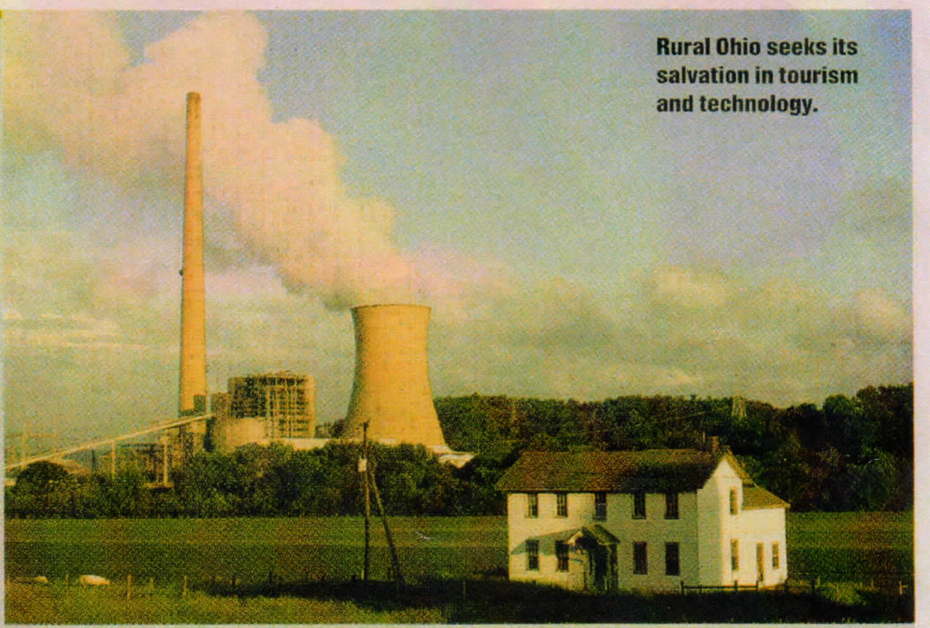
Columbus Steel CEO and Chairman Donal Malenick, who organized the consortium that led the former Buckeye Steel out of bankruptcy, is not sanguine. "The starting wage in China in a steel factory is 60 cents an hour—and no benefits," says Malenick, "and there's no EPA or OSHA looking over your shoulder." Malenick is a Bush supporter, but he worries that "the politicians haven't woken up and realized how big this is."

Shakedown. So far, most of Columbus Steel's savings have come from shaking off old debt burdens and shrinking its union obligations—though Holman stresses that the firm still provides health benefits, as well as 401(k) and profit-sharing plans. A $1.3 million loan and a tax break from the state also helped. Now that the firm is making a modest profit, Holman plans to invite the president to visit, as his father did in 1988. "And we hope he'll come," says Holman, who takes obvious pride in the historic factory's revival.

Holman also hopes to invest in new equipment, although state-of-the-art automation doesn't necessarily pay off in low-volume operations such as customized heavy parts. "A lot of automation is done for environmental and safety reasons," says OSU's Miller, who notes that people can be easier and cheaper to reprogram than machinery.

But old-line manufacturing is learning other new-age tricks. At Q3, CEO Price credits better data and management with

A NEW LOOK FOR APPALACHIA



Rural Ohio seeks its salvation in tourism and technology.

ATHENS, OHIO—Timing, John Richards would say, is everything. For more than a decade, the West Virginia native worked in a local auto-parts factory. But in 2002, Richards learned of an opening for a plant manager in a fledgling biotech firm and decided to take a risk. Today, he guides a team of employees at Diagnostic Hybrids Inc., which manufactures cell cultures used to detect, say, strep throat and SARS. And his old job at the auto plant? The factory shut down two months after he jumped ship.

This is the changing face of Appalachian Ohio, the southeastern portion of the state, where coal mines and auto and furniture factories once provided steady jobs to thousands. Although the region's 29 counties boast some of the highest unemployment rates in the state—topped by Morgan County at 15.2 percent unemployment in April—there is hope. A burgeoning tourism industry is pumping up the area's service economy, while the focus on luring high-tech firms has already reinvigorated several small towns.

Castles in the air. The Hocking Hills region, with its supposedly haunted caves and the natural beauty of nearby 233,000-acre Wayne National Forest, is the gem of the new tourism trade. Running through the heart of Hocking Hills is Route 93, chockablock with chalets, quaint bed and breakfasts, and craft stores. "It's growing so fast, I can't keep up," says Dot Scott, who sells country kitsch at the Cross Creek General Store, with Dolly Parton memorabilia inside and a garden dedicated to Jesus out front. At Ravenwood Castle, owner Sue Maxwell says weekend stays in her $195 luxury suites are booked much of the summer. "When I told the banks I wanted to build a castle in Ohio, some of them laughed at me," says Maxwell. "No one's laughing at me today." Indeed, an average of 20 new lodging facilities have opened every year in the past four years.

The tech sector, however, takes more nurturing. DHI counts on the support of a nearby Ohio University campus. The United States Enrichment Corp., which supplies enriched uranium fuel to commercial nuclear power plants, opted to construct another plant in Pike County after the governor's office offered more than $125 million in tax breaks, job retraining, and other incentives. "We're going to turn this town around," says Jim Morgan, an operations manager at USEC.

Such optimism, however, isn't universal. Infrastructure remains a problem. Large swaths of land without access to major roads, for example, dissuade companies from moving in. In Morgan County, Susan Kaster, business manager of a bed and breakfast that is now for sale, gestures toward shells of factories that once hummed with activity. "It was like a stake in my heart every time one closed," she says. *–Angie C. Marek* improving his firm's productivity and finances. Another big plus: Not only has an influx of refugees, many from Somalia, expanded the pool of potential workers, Price notes, but "people are more willing to do job sharing and part-time work."

Still, it's a constant struggle, says Chief Operating Officer Terrence O'Donovan. As auto and other end-product manufacturers winnow their supply chains, competition by suppliers grows fiercer. "As the shakeout goes on, you want to be one of the survivors. When you win, you win big, and when you lose, you lose big," he says.

And job insecurity runs high among many Buckeyes. The latest Hudson Employment Index shows that Ohio workers' spirits perked up a bit in April, but they remain considerably less optimistic than U.S. workers nationally. Still, on the Q3 factory floor, few workers say they are paying much attention to the presidential race. "One's just about as bad as the other," says Don Gibson, an 11-year employee. "The workingman doesn't stand a chance either way."

Jolted. Nonetheless, some of that insecurity seem to have seeped into the polls. Ohio, which narrowly chose George Bush over Al Gore in 2000, has Republicans ensconced in every statewide office. Yet the University of Cincinnati's Ohio Poll found only 46 percent of Ohioans now approve of the president's performance, a jolting drop from 76 percent a year earlier. A mid-May American Research Group poll found John Kerry leading Bush by 7 points.

And while Q3's employees are glad about the firm's bounce back, they aren't celebrating yet. "I'll work all the hours I can get. I need the money," says Gibson, who pays almost $600 a month for health insurance to cover his diabetic wife. "Me, I'd rather work a few less hours and get paid more so I can spend more time at home," says Wayne Keeler, an eight-year Q3 veteran who, like Gibson, weathered earlier layoffs at the firm.

Nor are their bosses insensitive to their worries. "The wage structure has to constantly be beaten down to compete internationally," O'Donovan frets. "It seems like the productivity gains are just coming through harder work. I wonder if anyone has studied what's happening to people's lives. Maybe we'd be willing to pay $500 more for a car if we knew our daughter didn't have to work on weekends. . . . There's a headline out there: 'Unbridled Capitalism Is Killing the American Dream.' "

Perhaps. But, like O'Donovan, most Ohioans are fighting to keep both the dream and their pocketbooks healthy. •

THE HONDA VOTE

Don't fret about 'offshoring' in Anna, where foreigners are bringing good jobs

BY RICHARD J. NEWMAN

ANNA, OHIO—Most of the 1.2 million engines produced each year at the sprawling Honda factory here go into Hondas: the Accord, the Civic, the Odyssey minivan. But last year the Japanese automaker got a new marquee customer for its Ohio power plants: General Motors. The world's biggest automaker tapped Honda to provide 50,000 high-output V-6 engines for the new Red Line version of the Saturn Vue SUV—a 250-horsepower V-6 that's similar to the one in the top-tier Accord.

The "offshoring" of U.S. jobs is a familiar story by now, especially in the auto industry, as GM, Ford, Chrysler, and their myriad suppliers have sought cheap labor in Mexico, China, and other locales. But while the Big Three have been shipping work overseas, foreign-based carmakers have become more Americanized than ever—and found ways to reap the biggest profits in the industry while still paying high wages to U.S. workers.

Asian and European auto companies and their suppliers now employ 216,000 Americans in manufacturing jobs, nearly one fourth of the industry total. The same companies have also been eagerly hiring well-paid American engineers and technical specialists, especially as they try to sell more profitable SUVs and pickup trucks—uniquely American products. Honda's new role as a supplier to GM further blurs the distinction between foreign and domestic brands. The once tiny footprint of foreign-based carmakers "is much more than tokenism," says David Cole, chairman of the Center for Automotive Research in Ann Arbor, Mich. "It's strategic planning."

Yet the domestication of foreign automakers remains obscured by the furor over outsourcing. In April, when Democratic presidential candidate John Kerry was discussing hybrid-electric cars like the Toyota Prius and the Honda Civic hybrid, he quipped, "I don't want Toyota and Honda to be the seller of these cars"—evidently unaware that Honda is one of Ohio's biggest employers. The Japan-baiting was meant to appeal to domestic unionized auto workers. But in central and western Ohio, where about 16,000 nonunion Honda workers live, the comment may have backfired. "I heard from multiple people complaining," says Eric Phillips, head of economic development for Union County, where Honda's Ohio operations are headquartered. "It was not taken very well in this area."

One reason the role of foreign automakers is not center stage is that their arrival was largely a ploy to avert trade restrictions. In the early 1980s, as Japanese brands gained a toehold in the U.S. market, Honda, Toyota, and other importers agreed to assemble some cars in the United States in lieu of tariffs or other penalties. The initial impact was minimal. When Honda opened its first U.S. car factory in 1982—an Accord plant in Marysville, Ohio—engines and most other major components were shipped from Japan.

But as auto production has become more sophisticated, business strategy—rather than trade politics—has dictated a larger presence in the world's most profitable market. In the '80s and early '90s, Honda executives in Japan decided that providing local jobs and contributing to the community were essential to building brand image in the United States. Cheap land and energy offered advantages unavailable in Japan. Building cars in dollars instead of yen would help reduce foreign-exchange risk. It is now less expensive to build an Accord here than to ship it from Japan.

Today, an archipelago of Honda facilities dots the bucolic landscape of central Ohio. A 950-person R&D staff in Raymond—including about 550 well-paid engineers—now designs nearly half of Honda models sold in the United States. Amid incessant

SCOTT GOLDSMITH FOR USN&WR

clamor at the Anna plant—Honda's largest engine factory worldwide—2,800 workers on two shifts pour molten steel, operate clanking presses, and work arm in arm with mechanical robots to assemble engines. The engines supply two Ohio assembly plants and another in Ontario, Canada. Overall, Honda's U.S. plants build about 60 percent of the Hondas sold in the United States. An additional 20 percent come from Canada, where they're built largely with U.S.-made parts. Only 16 percent of Honda vehicles sold here are imported from Japan.

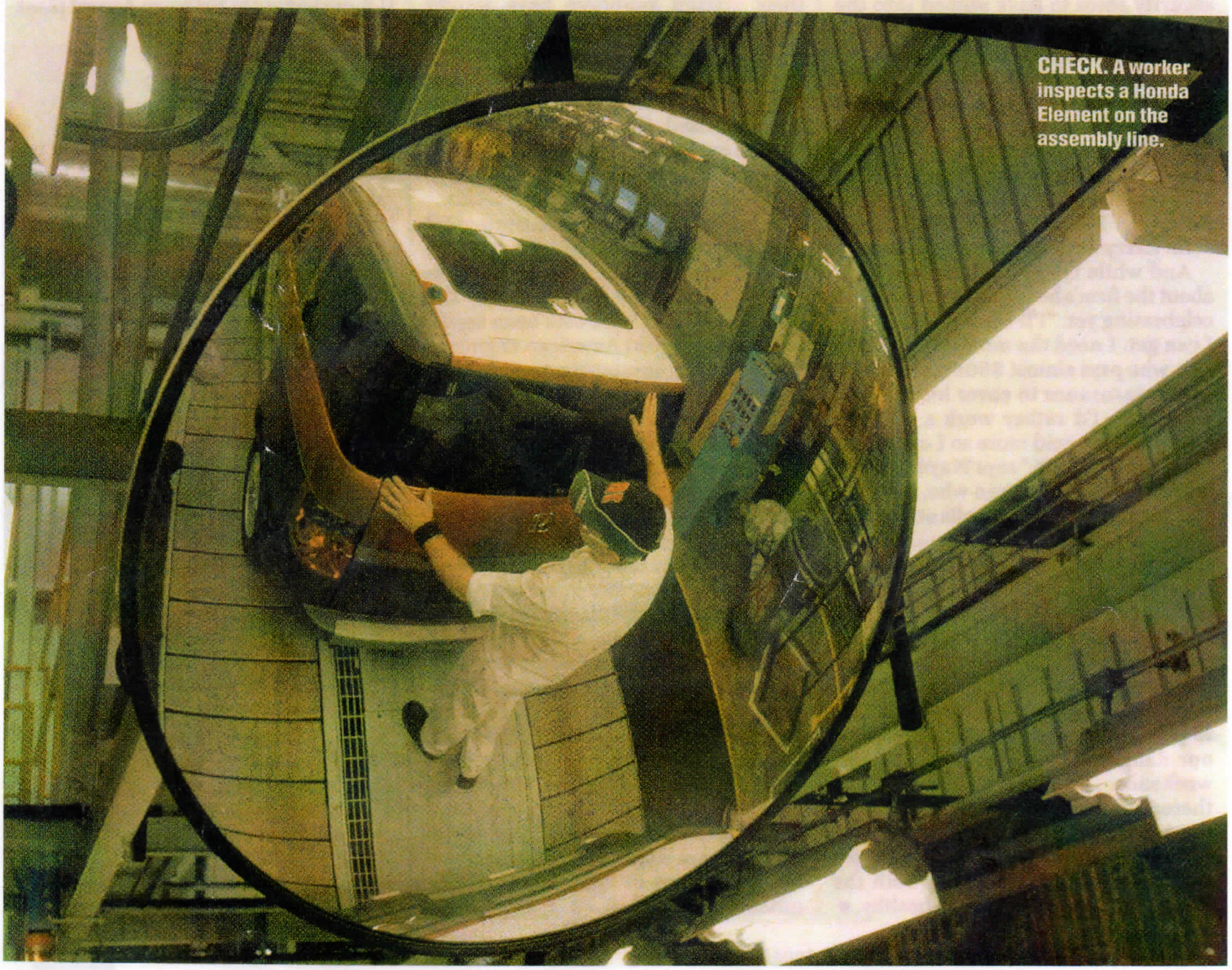
Honda also buys nearly $13 billion worth of parts from 620 suppliers in North America, with Ohio a prime beneficiary. "Anywhere you go in the state, you'll find somebody who supplies Honda," points out Paul Schumann, a metallurgical engineer at Anna. "Some are American companies, some Japanese transplants. But those are Americans working there."

Big Three executives and union officials point out that Honda has several advantages domestic automakers don't. While Honda offers its Ohio workers full medical benefits and a pension plan, it has hardly any retirees to support. About an hour's drive west, at United Auto Workers Local 696 in Dayton, the worker-retiree pyramid is inverted: The local represents about 1,600 fully employed members, working for auto-parts supplier Delphi—and about 3,500 retirees. Honda's newer factories are also far more efficient; and a nonunionized workforce allows Honda more freedom to invest in labor-saving technology.

No to unions. On the factory floor at Anna, many workers wear antiunion buttons on their white coveralls. Several UAW efforts to unionize have failed. "Honda has so much stuff in place for improving things, you really don't need a union," says Tammy Ferguson, a supervisor on a disk-brake line. While lower sales have slowed production recently and some retiring workers have not been replaced, Honda has had no layoffs since the recession started in 2001. "It's very easy to see the wealth Honda has brought to the area," says Schumann. "There are all these new homes, affluent-looking homes, that used to be farms."

Meanwhile, at Delphi, the threat of outsourcing to cheaper foreign suppliers persists. Honda, by comparison, has been bringing more work in-house, where it can monitor quality and efficiency more closely. "I look at Honda, and they're not trying to outsource," says Wesley Wells, AFL-CIO executive director for the Dayton area. "They're trying to insource, because of quality." Others point to Honda's long-term vision with envy: "Japanese companies are in it for the long haul," says Rick Tincher, a Delphi industrial hygiene technician.

There's little information suggesting whether U.S. employees of foreign firms are more likely to be Republicans or Democrats. But clearly they are less likely to line up in lockstep behind the unions, which have been a customary base of support for the Democratic Party. "At a union shop, they're going to do what the boss says," notes Mark Engle, another metallurgist at the Anna plant. "Here, there's a lot more independent thinking." That could lead to a brand-new designation in Ohio politics: the Honda vote. ●



CHECK. A worker inspects a Honda Element on the assembly line.