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## The New Face of the Silicon Age

How India became the capital of the computing revolution.

By Daniel H. Pink

Meet the pissed-off programmer. If you've picked up a newspaper in the last six months, watched CNN, or even glanced at Slashdot, you've already heard his anguished cry.

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He's the guy - and, yeah, he's usually a guy - launching Web sites like [yourjobisgoingtoindia.com](http://yourjobisgoingtoindia.com) and [nojobsforindia.com](http://nojobsforindia.com). He's the guy telling tales - many of them true, a few of them urban legends - about American programmers being forced to train their Indian replacements. Because of him, India's commerce and industry minister flew to Washington in June to assure the Bush administration that Indian coders were not bent on destroying American livelihoods. And for the past year, he's the guy who's been picketing corporate outsourcing conferences, holding placards that read *WILL CODE FOR FOOD* will code for food and chanting, "Shame, shame, shame!"



Now meet the cause of all this fear and loathing: Aparna Jairam of Mumbai. She's 33 years old. Her long black hair is clasped with a barrette. Her dark eyes are deep-set and unusually calm. She has the air of the smartest girl in class - not the one always raising her hand and shouting out answers, but the one who sits in back, taking it all in and responding only when called upon, yet delivering answers that make the whole class turn around and listen.



In 1992, Jairam graduated from India's University of Pune with a degree in engineering. She has since worked in a variety of jobs in the software industry and is now a project manager at Hexaware Technologies in Mumbai, the city formerly known as Bombay. Jairam specializes in embedded systems software for handheld devices. She leaves her two children with a babysitter each morning, commutes an hour to the office, and spends her days attending meetings, perfecting her team's code, and emailing her main client, a utility company in the western US. Jairam's annual salary is about \$11,000 - more than 22 times the per capita annual income in India.



Aparna Jairam isn't trying to steal your job. That's what she tells me, and I believe her. But if Jairam does end up taking it - and, let's face facts, she could do your \$70,000-a-year job for the wages of a Taco Bell counter jockey - she won't lose any sleep over your plight. When I ask what her advice is for a beleaguered American programmer afraid of being pulled under by the global tide that she represents, Jairam takes the high road, neither dismissing the concern nor offering soothing happy talk. Instead, she recites a portion of the 2,000-year-old epic poem and Hindu holy book the Bhagavad Gita: "Do what you're supposed to do. And don't worry about the fruits. They'll come on their own."



**This is a story** about the global economy. It's about two countries and one profession - and how weirdly upside down the future has begun to look from opposite sides of the globe. It's about code and the people who write it. But it's also

Jessica Wynne  
From top: Aparna Jairam, project manager; Kavita Samudra, senior software engineer; Aditya Deshmukh, project manager; Srividya Kanan, technical architect; Lalit Suryawanshi, senior software engineer.

about free markets, new politics, and ancient wisdom - which means it's ultimately about faith.

Our story begins beside the murky waters of the Arabian Sea. I've come to Mumbai to see what software programmers in India make of the anti-outsourcing hubbub in the US. Mumbai may not have as many coders per square foot as glossier tech havens like Bangalore and Hyderabad, but there's a lot more real life here. Mumbai is India's largest city - with an official population of 18 million and an actual population incalculably higher. It's a sweltering, magnificent, teeming megalopolis in which every human triumph and affliction shouts at the top of its lungs 24 hours a day.

Jairam's firm, Hexaware, is located in the exurbs of Mumbai in a district fittingly called Navi Mumbai, or New Mumbai. To get there, you fight traffic thicker and more chaotic than rush hour in hell as you pass a staggering stretch of shantytowns. But once inside the Millennium Business Park, which houses Hexaware and several other high tech companies, you've tumbled through a wormhole and landed in northern Virginia or Silicon Valley. The streets are immaculate. The buildings fairly gleam. The lawns are fit for putting. And in the center is an outdoor café bustling with twentysomethings so picture-perfect I look around to see if a film crew is shooting a commercial.

Hexaware's headquarters, the workplace of some 500 programmers (another 800 work at a development center in the southern city of Chennai, and 200 more are in Bangalore), is a silvery four-story glass building chock-full of blond-wood cubicles and black Dell computers. In one area, 30 new recruits sit through programming boot camp; down the hall, 25 even newer hires are filling out HR forms. Meanwhile, other young people - the average age here is 27 - tap keyboards and skitter in and out of conference rooms outfitted with whiteboards and enclosed in frosted glass. If you pulled the shades and ignored the accents, you could be in Santa Clara. But it's the talent - coupled with the ridiculously low salaries, of course - that's luring big clients from Europe and North America. The coders here work for the likes of Citibank, Deutsche Leasing, Alliance Capital, Air Canada, HSBC, BP, Princeton University, and several other institutions that won't permit Hexaware to reveal their names.

Jairam works in a first-floor cubicle that's unadorned except for a company policy statement, a charcoal sketch, and a small statue of Ganesh, the elephant-headed Hindu god of knowledge and obstacle removal. Like most employees, Jairam rides to work aboard a private bus, one in a fleet the company dispatches throughout Mumbai to shuttle its workers to the office. Many days she eats lunch in the firm's colorful fourth-floor canteen. While Hexaware's culinary offerings don't measure up to Google's celebrity chef and gourmet fare, the food's not bad - *chana saag*, *aloo gobi*, rice, chapatis - and the price is right. A meal costs 22 rupees, about 50 cents.

After lunch one Tuesday, I meet in a conference room with Jairam and five colleagues to hear their reactions to the complaints of the Pissed-Off Programmer. I cite the usual statistics: 1 in 10 US technology jobs will go overseas by the end of 2004, according to the research firm Gartner. In the next 15 years, more than 3 million US white-collar jobs, representing \$136 billion in wages, will depart to places like India, with the IT industry leading the migration, according to Forrester Research. I relate stories of American programmers collecting unemployment, declaring

bankruptcy, even contemplating suicide - because they can't compete with people willing to work for one-sixth of their wages.

The six Hexawarians are sympathetic but unmoved. They disagree with the very premise that cheap labor is hurting the US. And they think it's somewhat laughable that, because things aren't going exactly our way, ordinarily change-infatuated Americans are suddenly decrying change. "Back in the US, it's all about cheap, cheap, cheap. It's not only about India being cheap. It's quality services," says Jairam's colleague Kavita Samudra, who works on applications for the airline industry. "The fact that they're getting a quality product is why people are coming to us."

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**Scott Kirwin was laid off after nine months training three Indian programmers - his replacements. "It's not just IT people facing this," he says. "It's going to be anybody."**

Ritesh Maniar reminds me that Hexaware has scored a Level 5 rating from Carnegie Mellon's Software Engineering Institute, the highest international standard a software company can achieve. The others are quick to note that, of the 70 or so companies in the world that have earned this designation, half are from India. Over several days, here and at other companies, I hear this factoid repeated like a campaign talking point.

Translation: We're not just cheaper, we're better.

And that, they say, is good for everyone. Maniar, a senior technical architect, describes one American client: "We helped them become process-oriented, which they were not before. They were spending again and again on the same thing. We explained the process that we follow, because we would like to bring them up to our standards."

"Don't you think we're helping the US economy by doing the work here?" asks an exasperated Lalit Suryawanshi. It frees up Americans to do other things so the economy can grow, adds Jairam.

What begins to seep through their well-tiled arguments about quality, efficiency, and optimization is a view that Americans, who have long celebrated the sweetness of dynamic capitalism, must get used to the concept that it works for non-Americans, too. Programming jobs have delivered a nice upper-middle-class lifestyle to the people in this room. They own apartments. They drive new cars. They surf the Internet and watch American television and sip cappuccinos. Isn't the emergence of a vibrant middle class in an otherwise poor country a spectacular achievement, the very confirmation of the wonders of globalization - not to mention a new market for American goods and services? And if this transition pinches a little, aren't Americans being a tad hypocritical by whining about it? After all, where is it written that IT jobs somehow belong to Americans - and that any non-American who does such work is stealing the job from its rightful owner?

Maybe these US programmers should simply adjust. That's what Indian textile workers did when their country's government opened its quasi-socialistic economy in 1991, says Jairam. Some people lost jobs. They complained, but they found something else to do. Maniar uncorks an aphorism that he doesn't realize I've heard 8,000 times before (in part because American white-collar workers have long said it to their blue-collar compadres) - and that I don't realize I'll hear several times again during my stay: "There's nothing permanent except change."

**Back in the US**, you can feel the rage. Application developer Mike Emmons of Longwood, Florida, for example, is running for Congress on a platform that calls for the end of outsourcing. Emmons also wants to curtail temporary work visas for immigrant programmers, such as the always controversial H1-B and its stealthier counterpart, the L-1, which he says have cost him and other American programmers their jobs. "These cats will lie through their teeth," Emmons says, referring to incumbent members of Congress like the one he's trying to oust. "They're using immigration to reduce the wages of Americans." Other programmers, once resolutely go-it-alone apolitical types, have formed advocacy groups with righteous names like the Rescue American Jobs Foundation, the Coalition for National Sovereignty and Economic Patriotism, and the Organization for the Rights of American Workers.

One such group has adopted a friendlier title, the Information Technology Professional Association of America. But its founder, 37-year-old Scott Kirwin, voices the same indignation. "I'm very pissed off," he tells me over lunch in Wilmington, Delaware, where he lives. "I want to make people aware of what's going on with outsourcing."

Kirwin was a latecomer to the IT world. After college, he lived in Japan for five years, then returned to the States hoping to join the US Foreign Service. He didn't get in. In 1997, he and his wife moved to Wilmington, her hometown, and he took a job at a tech support company outside Philadelphia, where he learned Visual Basic. Kirwin discovered that he loved programming and did it well. By 2000, he was working at J.P. Morgan in Newark, Delaware, providing back-office database services for the firm's bankers around the world. But after Morgan merged with Chase, and the bloom left the boom, the combined firm decided to outsource the responsibilities of Kirwin's department to an Indian company. For nine months, he worked alongside three Indian programmers, all on temporary visas, teaching them his job but expecting to stick around as a manager when the work moved to India. Last March, Kirwin got his pink slip.

The experience did more than capsize his work life. It battered his belief system. He's long espoused the virtues of free trade. He says that he supported Nafta and that for 12 years he's subscribed to *The Economist*, a hymnal in the free trade church. But now he's questioning core beliefs. "These are theories that have really not been tested and proven," he says. "We're using people's lives to do this experiment - to find out what happens."

"I'm not religious," he tells me. "But I believe that everyone has to have faith in one thing. And my faith has been in the American system." That conviction is weakening. "Politicians are not aware of the problem that information workers are facing here. And it's not just the IT people. It's going to be anybody. That really worries me. Where does it stop?"

Seventy miles up the Northeast Corridor is a politician who is asking that very question - and who, in the process, has become something of a folk hero to programmers like Kirwin. Shirley Turner represents the 15th District in the New Jersey State Senate. In 2002, Turner learned that eFunds, the company that administers electronic benefits cards for the state's welfare recipients, had moved its customer service jobs from the US to a call center in Mumbai. She was stunned that the jobs were going overseas - and that taxpayer dollars were funding the migration. So Turner introduced legislation to ban the outsourcing of any state contracts to foreign countries.

Word of Turner's actions rippled across the Internet. Over the last year, she says, she's received more than 2,000 letters and emails from around the country - mostly from programmers. "I had no idea what these people were going through with outsourcing in the private sector," Turner told me at her district office in Ewing, New Jersey, just outside Trenton.

Turner's bill passed the state senate by a 40-to-0 vote. But it got bottled up in the assembly, thanks to the efforts of Indian IT firms and their powerhouse Washington, DC, lobbying firm, Hill & Knowlton. However, eFunds, chastened by the bad publicity and eager for more state contracts, moved its call center from Mumbai to Camden, New Jersey. And this former small-time civil servant found herself articulating what might be the political philosophy of the Pissed-Off Programmer.

Turner's office is decorated in early politico. Framed pieces of legislation hang on the wall. Large New Jersey and US flags stand behind her imposing desk. Her credenzas are crammed with photos of herself rubbing shoulders with various dignitaries, including three shots of her clasping hands with Bill Clinton. She's good at what she does - so smart and likable that she can make what many would consider retrograde views sound eminently reasonable. After talking to her for 10 minutes, I think, if Ross Perot had picked her as his running mate, he might have had a shot.

"We can't stop globalization," Turner says. But outsourcing, especially now, amounts to "contributing to our own demise." When jobs go overseas, governments lose income tax revenue - and that makes it even harder to assist those who need a hand. Losing IT jobs has particularly frightful consequences. In a jittery world, "it's really foolish for us to become so dependent on any foreign country for those kinds of jobs," she says. What's more, she continues, it imperils the US middle class. "If we keep going in this direction, we'll have just two classes in our society - the very, very rich and the very, very poor. We're going to look like some of the countries we're outsourcing to."

Her solution is simple: America first. Support American firms. Put Americans back to work. And only then, after we reach full employment, will outsourcing be an acceptable option. "If we can't take care of our own first, we shouldn't be looking to take care of other people around the world," she says. "If you're a parent, you don't take care of everybody on the block before you make sure your own children have their basic needs met."

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It all sounds so 20 years ago - when the threat to economic prosperity and national sovereignty was not Indian coders but Japanese autoworkers. Back then, the predictions were equally alarmist - the "hollowing out" of America, people called it. And the prescriptions were equally blunt - trade sanctions and "Buy America" campaigns.

So I toss a slur across her desk. I call her a protectionist.

"Oh, and I'm proud of it," she responds. "I wear that badge with honor. I am a protectionist. I want to protect America. I want to protect jobs for Americans."

"But isn't part of this country's vitality its ability to make these kinds of changes?" I counter. "We've done it before - going from farm to factory, from factory to knowledge work, and from knowledge work to whatever's next."

She looks at me. Then she says, "I'd like to know where you go from knowledge."

**Another day**, another global menace. Today I'm at Patni, the software company where Aparna Jairam worked for two years in the late '90s. Patni's headquarters sits in another section of Mumbai - and as at Hexaware, the contrast between inside and outside is stark. Its interior is Silicon Valley circa 1999 - curvy door handles, funky chairs, a rooftop patio, and a pool table. But when I glance out an office window, just beyond the sidewalk I see a family living in a makeshift dwelling of plywood and tattered plastic.

Patni differs from Hexaware in a few important ways. For starters, it's bigger. Patni is India's sixth-largest software and services exporter; Hexaware ranks 18th. Patni employs about 6,500 people in offices all over the world and has a long-standing relationship with GE and a \$100 million investment from the venture capital firm General Atlantic Partners. It also has a more secretive atmosphere. I'm not allowed to ask certain questions (including how much money the workers earn). When I set up my tape recorder for interviews, my ever present Patni minder pulls out his own tape recorder. Although security cameras abound, I'm not allowed on certain floors unless Patni's director of security accompanies me.

Yet for all this muscle-flexing, Patni remains a relative pipsqueak. Its 2002 revenue was about \$188 million. That same year, the American IT firm EDS hauled in revenue of \$21.5 billion. There's something adolescent about Patni - indeed, about many Indian IT firms. They're growing quickly, but they still don't quite seem like full-fledged adults. From an Indian perspective, though, this moment is understandably invigorating. The country now has the second-fastest-growing economy in the world. Within four years, IT outsourcing will be a \$57 billion annual industry - responsible for 7 percent of India's GDP and employing some 4 million people.

But from an American perspective, the threat this poses seems pretty meager. A \$57 billion market represents about 0.5 percent of US GDP. And for added perspective, it's important to continue looking out those windows. India has a long way to go. Nearly a quarter of the country lives in poverty. The telecommunications infrastructure is subpar. And modernity stands just steps away from ancient animosities. The week I was in Mumbai, global business guru and former MIT dean

Lester Thurow was in town trumpeting the possibilities of "Brand India" - as militants planted bombs in taxis and killed 53 people.

Nonetheless, as with all adolescents, through the gangliness and overconfidence you can glimpse the contours of the future. Patni's hallways are filled with the air of inevitability. Project manager Aditya Deshmukh worked in Baltimore and New Jersey for three years but has no desire to return to the States; India's where the action is. More than half of the Fortune 500 companies are already outsourcing work to India. One reason: Nearly every educated person here speaks English. For India - especially in its competition with China, where few have mastered Western languages - English is the killer app. This company and this industry will undoubtedly grow bigger, stronger, and smarter. That represents a threat to the status quo in the US. But such threats are an established pattern in our history. As Deshmukh reminds me before I have a chance to cover my ears and flee, "Change is the only constant."

A century ago, 40 percent of Americans worked on farms. Today, the farm sector employs about 3 percent of our workforce. But our agriculture economy still outproduces all but two countries. Fifty years ago, most of the US labor force worked in factories. Today, only about 14 percent is in manufacturing. But we've still got the largest manufacturing economy in the world - worth about \$1.9 trillion in 2002. We've seen this movie before - and it's always had a happy ending. The only difference this time is that the protagonists are forging pixels instead of steel. And accountants, financial analysts, and other number crunchers, prepare for your close-up. Your jobs are next. After all, to export sneakers or sweatshirts, companies need an intercontinental supply chain. To export software or spreadsheets, somebody just needs to hit Return.

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What makes this latest upheaval so disorienting for Americans is its speed. Agriculture jobs provided decent livelihoods for at least 80 years before the rules changed and working in the factory became the norm. Those industrial jobs endured for some 40 years before the twin pressures of cheap competition overseas and labor-saving automation at home rewrote the rules again. IT jobs - the kind of high-skill knowledge work that was supposed to be our future - are facing the same sort of realignment after only 20 years or so. The upheaval is occurring not across generations, but within individual careers. The rules are being rewritten while people are still playing the game. And that seems unjust.

Couple those changed rules with the ham-fisted public relations of the American companies doing the outsourcing and it's understandable why programmers are so pissed. It makes sense that they're lashing out at the H1-B and L-1 visas. US immigration policies are a proxy for forces that are harder to identify and combat. It's easier to attack visible laws than it is to restrain the invisible hand. To be sure, many of these policies, especially the L-1, have been abused. American programmers have done an effective job of highlighting these abuses - and during an election year, Congress will likely enact some reforms. But even if these visa programs were eliminated altogether, not much would change in the long run.

Patni's head of human resources, Miland Jadhav, compares the Pissed-Off Programmers' efforts to the protests that greeted Pizza Hut's arrival in India. When

the chain opened, some people "went around smashing windows and doing all kinds of things," but their cause ultimately did not prevail. Why? Demand. "You cannot tell Indian people to stop eating at Pizza Hut," he says. "It won't happen." Likewise, if some kinds of work can be done just as well for a lot cheaper somewhere other than the US, that's where US companies will send the work. The reason: demand. And if we don't like it, then it's time to return our iPods (assembled in Taiwan), our cell phones (manufactured in Korea), and our J. Crew shirts (sewn in Indonesia). We can't have it both ways.

Still, if you're 61 years old, it makes sense to borrow a page from Charlie Chaplin and try to throw a wrench into the machine. John Bauman is 61 years old. More than a year ago, Northeast Utilities fired Bauman and 200 other IT consultants. From his home in Meriden, Connecticut, he created the Organization for the Rights of American Workers. The mission: to protest H1-B and L-1 visas. He feels that if he can slow things down, he stands a chance. When I speak to him by phone one afternoon, I offer the standard defense of globalization and free trade - that they disrupt in the short term but enrich over time. But it's hard to make this argument with much gusto to a man who, faced with his unemployment benefits running out, had to take a temporary job delivering boxes for FedEx. The invisible hand is giving him the finger. A compassionate society must somehow help its John Baumans.

But the rest of us, like it or not, will have to adjust. The hints about how to make this adjustment are evident at Patni. As I meet programmers and executives, I hear lots of talk about quality and focus and ISO and CMM certifications and getting the details right. But never - not once - does anybody mention innovation, creativity, or changing the world. Again, it reminds me of Japan in the '80s - dedicated to continuous improvement but often at the expense of bolder leaps of possibility.

And therein lies the opportunity for Americans. It's inevitable that certain things - fabrication, maintenance, testing, upgrades, and other routine knowledge work - will be done overseas. But that leaves plenty for us to do. After all, before these Indian programmers have something to fabricate, maintain, test, or upgrade, that something first must be imagined and invented. And these creations must be explained to customers and marketed to suppliers and entered into the swirl of commerce in a fashion that people notice, all of which require aptitudes that are more difficult to outsource - imagination, empathy, and the ability to forge relationships. After a week in India, it seems clear that the white-collar jobs with any lasting potential in the US won't be classically high tech. Instead, they'll be high concept and high touch.

Indeed, Kirwin, the programmer in Delaware, partly confirms my suspicion. After he lost his job at J.P. Morgan, he collected unemployment for three months before he found a new job at a financial services company he prefers not to name. He's now an IT designer, not a programmer. The job is more complex than merely cranking code. He must understand the broader imperatives of the business and relate to a range of people. "It's more of a synthesis of skills," he says, rather than a commodity that can be replicated in India.

Kirwin still believes the job is "offshorable," though I'm less certain. And he's earning less than he did at J.P. Morgan, though the downturn is much to blame for that, as it is for at least part of the broader anxiety that programmers are feeling.

But Kirwin does begin to address Senator Turner's question. Back in New Jersey, she introduced what appeared to be an unanswerable riddle: What comes after knowledge? The answer, perhaps, is an update of the slogan that appears in giant steel-and-neon letters on the Trenton Bridge, just a few miles from Turner's office. That slogan, affixed to the bridge in 1935 to proclaim the region's manufacturing strength, reads *TRENTON MAKES - THE WORLD TAKES*. Now that the rest of the world is acquiring knowledge, and we're moving to work that is high concept and high touch, where innovation is essential but the path from breakthrough to commodity is swift, the more appropriate slogan - of both admonition and possibility - might be this: *AMERICA DISCOVERS. THE WORLD DELIVERS*.

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**It's a soggy**, breezy Saturday afternoon - and I'm hanging out with Aparna Jairam and her husband, Janish, in their comfortable sixth-floor flat in suburban Mumbai. Janish, who also works in the IT industry, is a genial fellow whose laid-back friendliness nicely complements his wife's quiet intensity. We're drinking tea, eating vadas, and discussing the future.

"Someday," Janish says, "another nation will take business from India." Perhaps China or the Philippines, which are already competing for IT work.

"When that happens, how will you respond?" I ask.

"I think you must have read *Who Moved My Cheese?*" Aparna says to my surprise.

Janish gets up from the couch, and to my still greater surprise, pulls a copy from the bookshelf.

*Who Moved My Cheese?* is, of course, one of the best-selling books of the past decade. It's a simpleminded - and, yes, cheesy - parable about the inevitability of change. The book (booklet is more like it - the \$20 hardcover is roughly the length of this article) is a fable about two mouselike critters, Hem and Haw, who live in a maze and love cheese. After years of finding their cheese in the same place every day, they arrive one morning to discover that it's gone. Hem, feeling victimized, wants to wait until somebody puts the cheese back. Haw, anxious but realistic, wants to find new cheese. The moral: Be like Haw.

Janish gave Aparna a copy of the book for their wedding anniversary last year. (He inscribed it, "I am one cheese which won't move.") She read it on a Hexaware commuter bus one morning and calls it "superb."

The lesson for Aparna was clear: The good times for Indian IT workers won't last forever. And when those darker days arrive, "We should just keep moving with the times and not be cocooned in our little world. That's the way life is." Or as Haw more chirpily explains to his partner, "Sometimes, Hem, things change and they are never the same. This looks like one of those times. That's life! Life moves on. And so should we."

If you're among the pissed off, such advice - especially coming from talking rodents chasing cheddar around a maze - may sound annoying. But it's not entirely wrong. So if Hem and Haw make you hurl, return to where Aparna began when I met her that first day - the sacred text of Hinduism, the Bhagavad Gita, whose 700 verses many Indians know by heart.

The Gita opens with two armies facing each other across a field of battle. One of the warriors is Prince Arjuna, who discovers that his charioteer is the Hindu god Krishna. The book relates the dialog between the god and the warrior - about how to survive and, more important, how to live. One stanza seems apt in this moment of fear and discontent. "Your very nature will drive you to fight," Lord Krishna tells Arjuna. "The only choice is what to fight against."

## The Indian Machine

**Computers threatened our jobs, but ultimately made us stronger. So will outsourcing.**

*by Chris Anderson*

**Worried about** India's practically infinite pool of smart, educated, English-speaking people eager to work for the equivalent of your latte budget? Get used to it. Today's Indian call centers, programming shops, and help desks are just the beginning. Tomorrow it will be financial analysis, research, design, graphics - potentially any job that does not require physical proximity. The American cubicle farm is the new textile mill, just another sunset industry.

The emergence of India is the inevitable result of the migration of work from atoms to bits: Bits can easily reach people and places that atoms cannot. India's roads and politics are still a mess, but cheap fiber and a glut of satellite capacity have liberated an army of knowledge workers. Never before have we seen such a powerful labor force rise so quickly.

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Jessica Wynne

There is some solace in history. Agricultural jobs turned into even more manufacturing jobs, which decades later turned into even more service jobs. The cycle of work turns and turns again. Neat.

Of course, there's another part of the cycle: anxiety. It used to be that factory workers worried, but office jobs were safe. Now, it's not clear where the safety zone lies. It's not a matter of blue collar versus white collar; the collar to wear is Nehru.

For US workers, the path beyond services seems uncertain. But again, history provides a guide. Thirty years ago, another form of outsourcing hit the US service sector: the computer. That led to a swarm of soulless processing machines, promoted by management consultants and embraced by profit-obsessed executives gobbling jobs in a push for efficiency. If today's cry of the displaced is "They sent my job to India!" yesterday's was "I was replaced by a computer!"

Then, as now, the potential for disruption seemed infinite. Data crunching was just the start. Soon electronic brains would replace most of the accounting department, the typing pool, and the switchboard. After that, the thinking went, the modern corporation would apply the same technology to middle management, business analysis, and, ultimately, decision making. If your job was emptying an inbox and filling an outbox, you were begging for someone to draw the I/O analogy - and act on it. Indeed, computer terminology is littered with traces of what were formerly jobs: printers, monitors, file managers; even computers themselves used to be people, not machines.

Computers have, of course, reshaped the workplace. But they have also proved remarkably effective at creating jobs. Bookkeepers of old, adding columns in ledgers, are today's financial analysts, wielding Excel and PowerPoint in boardroom strategy sessions. Secretaries have morphed into executive assistants, more aides-de-camp than stenographers. Typesetters have become designers. True, in many cases different people filled the new jobs, leaving millions painfully displaced, but over time the net effect was positive - for workers and employers alike.

At the same time, we learned the limits of computers - especially their inability to replace us - and our fear of a silicon invasion diminished. The growing détente was reflected in 40 years of Hollywood films. *Desk Set*, from 1957, was about a research department head who keeps her job only after a battle of wits with a computer (the machine blows up). By 1988, the computer had moved from threat to weapon: In *Working Girl*, Melanie Griffith has both a stock market terminal and a PC on her desk and uses her skills and knowledge to move from secretary to private office. By the time Mike Judge made *Office Space* in 1999, the PC had faded into just another bit of cubicle furniture.

We are now in the *Desk Set* period with India. The outsourcing wave looks awesome and unstoppable. Like the mystical glass house of the 1970s data processing center, India's outsourcing industry thrums with potential and power, as if it were itself a machine. Today, the outsourcing phenomenon is still mostly in the batch-processing stage: Send instruction electronically, receive results the same way the next morning. But the speed at which the Indian tech industry is learning new skills is breathtaking. Some US firms now outsource their PowerPoint presentations to India, a blow to the pride of managers everywhere. From this perspective, India looks like an artificial intelligence, the superbrain that never arrived *in silico*. No wonder workers tremble.

But the Melanie Griffith phase is coming, as is the Mike Judge. It's not hard to see how outsourcing to India could lead to the next great era in American enterprise. Today, even innovative firms spend too much money maintaining products: fixing bugs and rolling out nearly identical 2.0 versions. Less than 30 percent of R&D spending at mature software firms goes to true innovation, according to the consulting firm Tech Strategy Partners. Send the maintenance to India and, even after costs, 20 percent of the budget is freed up to come up with the next breakthrough app. The result: more workers focused on real innovation. What comes after services? Creativity.

Chris Anderson ([ca@wiredmag.com](mailto:ca@wiredmag.com)) is Wired's editor in chief.

## Will Work for Rupees

### US jobs are fleeing overseas...



#### United States

GDP per capita **\$35,060**  
Unemployment rate **5.8%**  
Labor force **141.8 million**  
Population below the poverty line **13%**  
Typical salary for a programmer **\$70,000**

#### FEATURE:

[The New Face of the Silicon Age](#)

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[The Indian Machine](#)

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### ... and heading to the subcontinent ...



#### India

GDP per capita **\$480**  
Unemployment rate **8.8%**  
Labor force **406 million**  
Population below the poverty line **25%**  
Typical salary for a programmer **\$8,000**

#### Top 5 US Employers in India

**General Electric** 17,800 employees  
**Hewlett-Packard** 11,000 employees  
**IBM** 6,000 employees  
**American Express** 4,000 employees  
**Dell** 3,800 employees

**... where the work gets done for a fraction of the price.**

## **The Outsourcer**

**This man just convinced the CEO to send your job to India. Kiss your cubicle good-bye.**

*by Josh McHugh*

**US companies** are expected to ship more than 200,000 service jobs to countries like India every year for the foreseeable future. The simple concept at the root of this trend: A trained third world brain is every bit equal to a trained American brain, at a fraction of the price. Which is not to say a CEO's decision to embark on an outsourcing strategy is ever simple. By nature, CEOs are averse to appearing heartless by taking a job from a member of the community and handing it to someone very far away. When it comes time for such ruthlessly efficiency, a CEO needs motivation. He needs a management consultant.

### **FEATURE:**

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**Matthew Mahon**

Gut-wrenching change is always good business for consulting firms, and outsourcing is no exception. After two horrible years for the consulting industry, spending on consulting services is expected to jump 9 percent over the next two years, invigorated by the sudden need for advice on sending tech jobs abroad, according to Kennedy Information. In the last few years, the major consultancies have all beefed up their outsourcing divisions.

For an inside take on the consultant's role in pushing jobs overseas, listen to Mark Gottfredson. As cohead of outsourcing strategy at Bain & Company, Gottfredson tells the tale of a recent client, a CEO who was brought back from retirement to save the struggling West Coast hardware firm he started many years ago. A pillar of the community for having created thousands of local jobs, the CEO originally resisted outsourcing. But as his stock price and market share plummeted, he became desperate, and agreed to take a meeting with Gottfredson.

Gottfredson's team paraded out a variety of charts and graphs that all boiled down two simple options: a) become competitive again by sending jobs someplace they could be done better and cheaper, or b) face a slow death. The CEO ordered a complete efficiency audit, at the end of which Gottfredson recommended outsourcing all call centers, manufacturing, HR, IT, and back-office operations.

Exasperated, the CEO relented and has since trimmed \$130 million from his expenses. What's left of the company? Whatever it is, it's leaner and more competitive, and, most important, it's still alive. Gottfredson is utterly unapologetic. "The beauty of our system is that we've always had the ingenuity to come up with new things to do," he says. "This country has an endless supply of initiative and drive." Easy for him to say.

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*Daniel H. Pink (dp@danpink.com) is the author of Free Agent Nation and the forthcoming A Whole New Mind.*