

## CHAPTER FOUR

### *600,000 Villages*

**L**AST APRIL, AT THE HEIGHT OF THE DRY SEASON, AS REPORTS of suicides by farmers in Vidarbha, a region in eastern Maharashtra, were hitting the Indian press weekly, I got a call from an old journalist friend of mine in Bombay, Dilip D'Souza. He invited me to join him on a trip he was planning to visit villages where farmers were committing suicide. A couple of weeks later, I was on an overnight train from Bombay to Nagpur, the nearest major city to the villages in Vidarbha we wanted to visit.

I had not traveled by train in India since my student days, when time was more abundant in my life and the only airline was the relatively expensive, and at the time grossly inefficient, state-run Indian Airlines. I met Dilip at his home in Bandra. We took a commuter rail train to Dadar station, where we caught our train to Nagpur. Dadar is a no-nonsense suburban station, grimy and spare. The late-April air was warm and cloying, even at night. A couple of rats scampered along the tracks, slipping into a hole along the bottom of the platform as the train rolled in. Dilip, who says air-conditioning makes him sick, helped me find my berth in a second-class, air-conditioned sleeper carriage, then proceeded to his own non-air-conditioned carriage. The train was almost completely full when we got on, having originated at Bombay's main Chhatrapati Shivaji Terminus.

Formerly known as Victoria Terminus, and still called VT by locals, Chhatrapati Shivaji is a gorgeous example of British imperial architecture in India, an ornate pile of rounded towers with sculpted

gargoyles jutting out from its central cupola. It would have felt different to depart from one of the most fabled train stations in the world rather than plain, suburban Dadar, and I was sorry we didn't have time to trek downtown to get the train there. But the moment I entered the carriage, all the romance of train travel in India, especially on an overnight train, came rushing back. I stowed my luggage and nodded a greeting to the passengers sharing my compartment, a middle-aged woman, an older woman and her husband, and two men. About an hour after we left Dadar, an attendant came through carrying starched white sheets, pillows, and heavy wool blankets. He converted our seats into triple-stacked sleeping berths and made up our beds. I was lulled to sleep by the gentle rocking of the train, the muted percussion of wheels bumping over tie after tie like the diastolic rhythm of a great maternal heart.

When I woke up, I was back in the India I remembered from before the great boom. The attendant returned, stripped our berths, and flipped them up to restore the banquettes to their daytime position. Passengers with tousled hair and rumpled clothes made their way to the bathroom to freshen up. I took my turn at the stainless steel, squat toilet and sink, both of which were much cleaner than the horrid facilities I remembered from years before. A series of personnel from the kitchen circulated through the coaches offering hot tea and greasy breakfast omelets. Most passengers had brought their own food. They broke out *teplas* and rotis, biscuits and fruit. Missing my usual morning coffee, I bought a small thermos of tea, but it was so sweet, I couldn't drink it.

As the engine eased into the stations along its route, it sounded a long, plaintive whistle. Vendors rushed the train with oranges, slices of fresh coconut, roasted peanuts, more tea, cold sodas. Then, the station was left behind. The vast landscape of India rolled past in an endless Technicolor reel of dusty towns, villages huddled near pale green mosques, larger-than-life, blue-suited statues of Dalit (untouchable) leader Dr. Bhimrao Ramji Ambedkar, or saffron flags above a Hindu temple. Emerald fields opened to the pale, endless sky. Dhori-clad farmers with bright turbans and fantastic mustaches guided patient bullocks through lines of neat furrows. A glorious *gulumohar* (flame of

the forest) tree in full crimson flower flashed an explosion of color and was gone. Boys with long staffs shepherded goats through barren gullies. Women walked with ramrod-straight spines under huge loads of firewood or fodder balanced on their heads. There were herds of doe-eyed, humpbacked cows, and troupes of great black-faced langur monkeys careening under the umbrellas of old mango trees heavy with fruit, their tails held aloft like question marks. The train crossed a river in Pulgaon. It was a mere trickle at that time of year, meandering through a wide, sandy bed. Buffaloes sank gratefully into the mud next to white cranes balanced between lily pads. Women pounded clothes clean upon glistening rocks. Behind them, brilliant saris lay drying in rows of insouciant color.

This is the India most Indians know. Seventy percent of India's population lives in rural areas. There are 120 million farming families in India. There are six hundred thousand villages.

I have traveled by train the length and breadth of India by third class on a hard wooden bench, by ordinary second class on a grimy vinyl-upholstered seat, and by air-conditioned second class. Once, on a seventeen-hour journey, I sat in an aisle on my bag, my torso twisted painfully away from my legs by the crush of people. I was riding in the women's compartment on my way to the Pushkar Mela, an annual festival and livestock fair filled with camels and brightly dressed nomads. All around me village women from Rajasthan in full traditional dress sang joyous religious songs that rang through the carriage. Laughing, they cradled babies, scolded toddlers, and recounted bawdy stories.

Traveling by train in India is a nineteenth-century experience. Gliding on tracks laid into vast interiors to bring raw materials to bustling port cities, the train is a souvenir in steel of the conquest of the earth by industrious Western powers. Jet aircraft take passengers to any city in India within a couple of hours. A train journey takes time, whole days and nights, through a country air passengers never see. By the end of the journey, after sharing snacks, watching each other's bags during bathroom breaks, learning each other's life stories, and listening to each other's snores, parting always provokes a peculiar sadness.

### *In the Land of Cotton*

Of all the riches of the East, it was fine, handwoven cloth of cotton and silk that lured the British East India Company to India. The insatiable European appetite for calicoes (named after the Indian port of Calicut whence they came) and muslins, silks and paisleys, drove the men sent from England to procure these luxuries mad with greed. One after another amassed great fortunes or perished in the attempt. To corner the textile trade, the East India Company ruthlessly reduced India's master weavers from independent agents selling their own products to employees of the company, weaving what they were ordered at prices set by the company, take it or leave it. Those who protested had their thumbs cut off so they could never weave again; a barbaric act that condemned them to starvation. The export of cotton to England fueled the industrial revolution and drove the invention of new technologies to harvest, process, spin, and weave cotton into cloth. Mechanization moved weaving out of India to new mills in Lancaster, England, that hummed with cotton that could never grow in frigid Britain. Finished bolts of cloth were sold back to Indians.

Human beings first cultivated cotton in India five thousand years ago. Cotton textile fragments from the ancient Indus Valley civilization show great skill in weaving and printing. Herodotus lauded Indian cotton fabrics in the fifth century BC, and India exported cotton cloth to both ancient Greece and Rome. The cotton species indigenous to India are *G. herbaceum* and *G. arboreum*. These are short-staple varieties. The longer-staple American species of cotton, *G. hirsutum* and *G. badense*, are also cultivated now. Hybrids abound. Some two hundred varieties of cotton are grown in India. Short-staple native cotton varieties are well adapted to local conditions and are perfectly suitable for hand-weaving. Power looms demand the greater tensile strength of longer-staple cotton. The suitability of cotton for power looms determines its quality rating. Longer-staple, higher-tensile-strength cotton receives a higher grade, and the farmer receives a higher price.

The nemesis of cotton is the insect *Anthonomus grandis* Boheman, otherwise known as the boll weevil. Winged adults fly into cot-

ton fields, where they mate, and the females lay their eggs in cotton flowers. The larvae grow inside the cotton boll, ruining it. In the 1940s, Indian farmers began using commercial pesticides. Initially these worked wonderfully, but the weevils became resistant. A new generation of pesticides again brought the weevils under control, but in time they became resistant to these as well. Seventy percent of pesticides used in India are used on cotton. Still, the boll weevil's resistance has grown so strong that multiple applications of pesticides, up to ten sprayings a year, cannot control them.

The train arrived in Nagpur at eight thirty in the morning. The temperature was already over a hundred degrees Fahrenheit. Outside the station, we found the driver Dilip had hired. Thankfully, Dilip could tolerate air-conditioning in a car, and I asked the driver to put it on full blast. Nagpur is located in the exact center of India. It has been designated as the future site of India's first air-cargo hub. Boeing is planning to build a new aircraft maintenance center for all of Asia here. More traditionally, Nagpur is famous for being the orange capital of the country. There were billboards for oranges everywhere. We passed a giant concrete orange on a pillar on the side of one of the city's avenues.

Our first stop was for breakfast with journalist Jaideep Hardikar, who has written extensively for a variety of publications on the area's farmer suicides. We went to his modest apartment, where several pet cats rubbed up against our legs as we enjoyed a breakfast of tea and *uppama*, a South Indian breakfast food made from semolina. Jaideep gave us a sense of which districts we might want to check out, and some background on how the farmers' situation had become so desperate.

While India's educated urban elite and large landowners are enjoying the country's economic boom, millions of Indian farming families are struggling. The government has ended some price supports, rains have failed or been erratic, water tables have dropped, and wells have gone dry. These problems are familiar to American farmers, but most get more government support than Indian farmers, and when all else fails, chances are American farmers can get a job off the farm. Indian farmers aren't so lucky. In an effort to survive, farmers borrow money at usurious rates to purchase expensive new hybrid and genetically

engineered seeds, synthetic fertilizers, and pesticides. To get the cash they need to repay these debts, they shift production even further from subsistence farming to cash crops. When these fail, they have no way to pay back their debts, and no food either. These factors have conspired to make the future of thousands of Indian farmers so grim, they exert the only power they have left over their fate: they kill themselves.

Since 1997, more than one hundred thousand Indian farmers have committed suicide. This grim number is directly linked to changes in India's agricultural policy, a lack of legitimate credit opportunities that drives farmers to borrow from rapacious moneylenders, and a serious water crisis.<sup>1</sup> The worst-hit states are Andhra Pradesh, Karnataka, Kerala, and Maharashtra. Ironically, these are states where urban centers have flourished during the same period: Hyderabad in Andhra Pradesh, Bangalore in Karnataka, Trivandrum in Kerala, and Bombay in Maharashtra.

We left Jaideep's place refreshed and eager to get out into the country. The city gave way to a semi-industrial exurb. There were dusty, apparently abandoned small-scale factories, little concrete-block shops, and women carrying stacks of twisted branches of firewood on their heads. Out of this parched landscape, seared by the April sun, there suddenly appeared a gigantic water park, a European medieval castle complex with crenellated turrets. Though it was a hot day during India's summer vacation, the park was closed. Just a few kilometers down the road, we saw a huge billboard exclaiming, "Highland Park! Up the Hill, Full of Thrill!" Around the next bend, on a little brown hill, there was yet another amusement park, with a Ferris wheel, a ride that looked like a long dragon with seats along its back, and a couple of water slides. It too was closed and looked semiderelict.

Dilip had a list of farmers who had recently committed suicide published by the Vidarbha Jan Andolan Samiti (VJAS), an organization run by Kishore Tiwari that advocates for the plight of the region's farmers.<sup>2</sup> The list indicates the name of each victim and the district where the village is located. It is compiled from hospital postmortem reports and press reports that are all individually verified by VJAS. We decided to concentrate on a few districts that we could visit on a meandering loop.

On the two-lane highway, lorries jolted along with their gaily painted HORN PLEASE entreaties to honk if passing. SUVs whizzed past without honking, even around blind corners. Three-wheelers overloaded with farm produce or people listed precariously. Every few minutes, a vehicle passing in the opposite direction threatened to hit us head-on, swerving into its own lane at the last moment. Numerous signs exhorted safe driving, and Dilip and I made a game of spying them first and reading them out: "Road signs are signs of life." "Highway is not a way to get high." And on a bridge over a river, the mysterious "Please don't deep down." We left the highway and headed out on single-lane asphalt ribbons that cut across the fields. There was cotton everywhere but it was past harvesttime, and the plants were shriveled and brown. Many of them had the telltale rusty-red leaves of *lalia*, a disease that turns the cotton red and destroys the plant. We stopped to ask directions, told the people we met why we had come, and asked them if they knew of anyone who had committed suicide recently. The villagers readily directed us to victims that weren't on the Vidarbha Jan Andolan Samiti's list.

Outside the small city of Akola, we found ourselves in the village of Dadham, a typical assemblage of ramshackle houses, some made of local materials of wattle and daub topped by tile roofs, and some simple concrete, one-room boxes. None of the lanes in the village were paved, and waste water ran in rivulets wherever gravity pulled it, sometimes along the edge of the lanes but more often snaking around the middle. Semiferal dogs napped in the shade, pigs rooted in the muck, and cows were tethered under scrubby acacia trees. The village leaders came out and ushered us toward the Gram Panchayat office. We got a ready reception from these villagers. The situation of farmers in this area is grim. The arrival of a journalist from Bombay and a foreign writer meant only one thing to these people: surely, we were there to help.

The Gram Panchayat is the village-level governance body. Every village in India has a Panchayat or five-member board that decides local matters and receives government funds allocated to the village. The Gram Panchayat office in Dadham is typical: a single-room, concrete box with open windows protected by iron bars, adorned by a

collection of old pictures hung just below the ceiling. There are national and regional heroes: Gandhi, Netaji Subhash Chandra Bose, Rajiv Gandhi, Shivaji, Ambedkar, and, the most recent, Indira Gandhi, assassinated in 1984. Behind Bose's head, a sparrow was busy renovating its nest. There were also two holy figures: Sai Baba and the Buddha.

Dadham, like nearly all the villages we visited, is a village of Dalits or untouchables, the lowest social stratum in India's rigid hierarchy of caste, so low, they are below the four main caste categories of, in descending order: Brahmans or learned priests, Kshatriyas or noble warriors, merchants, and farmers. When we asked villagers what their religion was, they inevitably replied "Buddhist," a religion to which Ambedkar, the great leader of India's untouchables, converted in order to escape India's brutal caste hierarchy. Instead of a Hindu temple or a Muslim mosque, these villages had life-size or larger-than-life-size statues of Ambedkar standing smiling in a robin's-egg-blue Western suit wearing a pair of black-rimmed eyeglasses. A couple of village elders and a half dozen young men hurriedly assembled in the Panchayat office. Out of respect, we all removed our shoes before entering the building. The dusty concrete floor looked as if it hadn't been swept in weeks. We were invited to sit on plastic chairs around a wooden table. The only other furniture was a blackboard and an old metal armoire. The men told us their story.

Premchand Pandurang Kule was twenty-two or twenty-three years old when he killed himself by drinking liquid pesticide. His father was infected with leprosy and had given over his farm of two acres to Premchand. With only that much land, which he planted in cotton, the family could hardly survive. Premchand's father needed medicine and Premchand had no money, so, like several other people in the village and millions of poor people across India, Premchand borrowed two thousand rupees (about \$45) from a private moneylender. The moneylender, Bhandu Wakhare, lived in Akola. Several people in the village owed him money, and he came around regularly, always in the company of a couple of strong-arms, to collect on his loans. Wakhare charged 10 percent interest—per week. In the beginning, Premchand

could pay him the interest, but soon he fell behind, and as his debt soared, any hope of paying it off was lost.

Wakhare terrified the village, striding in as if he owned the place, bursting into homes, beating people up. "People were very afraid," one of the men told us. "They would run away and hide until he left. He used to take people to his house in Akola and beat them up there too." One day, Premchand witnessed a brutal beating of another villager who owed Wakhare money. He was so scared, he "went out to the jungle and took poison," the men said. He then dragged himself back to the village and died a torturous death. Premchand was married and had a one-year-old son.

When Wakhare discovered his prey had killed himself, he became enraged. He stormed into the village, breaking down doors, bellowing, going into other debtors' houses and verbally abusing their wives. He went out to Premchand's fields, found his wife and mother working there. He beat Premchand's mother so savagely he broke her thigh. He told her when he was done, "If you run away, I will rape your daughter." He stomped back into the village, destroyed the family's chicken coop, and smashed up a motorcycle. Then he left.

Wakhare had gone too far. The villagers were incensed. They forgot their fear and vowed to stop Wakhare from terrifying them. That afternoon, Wakhare returned. He was drunk, and so cocky he'd come without his bodyguards. The men in the village surrounded him and beat him to death with lathis (long batons used all over India even by police to beat people). The villagers called the police at four in the afternoon, but the police didn't come until 9 p.m. The villagers were surprised it took the police so long. In the past when they had called them during Wakhare's rampages, the police hadn't responded at all. The villagers reported they had heard Wakhare saying on his mobile phone, "Shut up. Don't interfere. You're getting your fifty thousand."

When the police finally showed up, they asked who was responsible for Wakhare's murder. No one would say anything. Instead, the villagers told the police about all the bad things Wakhare had done to them. Then, one man stepped forward and said, "I did it"; then another. One after another, each man said, "I did it." The village *patil*

or headman said, "Wakhare harassed many people in the village. He also abused these five men." The police promptly took the five into custody along with Premchand's old mother-in-law, accusing them of the murder. In a practice typical in India, the police gathered witness reports from people outside the village who weren't anywhere near the scene of the crime. Wakhare's father came and verbally abused the villagers, promising revenge.

When the case came up for trial, every man in the village again testified that it was he who had murdered Wakhare. The judge acquitted the five accused and threw out the case. After the trial, the police came to the village and told the men, "What we could not do, you have done." The villagers of Dadham heard that when Wakhare's neighbors in Akola learned he'd been killed, they handed out sweets in the streets.

We visited several other villages. The spectacle of dire poverty was evident everywhere: barefoot children in rags with matted hair, open sewers, broken-down string beds shared by whole families, thin, filthy old quilts, crumbling walls draped with plastic tarps. People were barely hanging on. They begged us to help them. Could we get someone in the family a job? Could we help speed up a government payout? Could we get them a loan?

In the village of Barshi Takli, we entered a broken-down hovel half-open to the elements with a dirt floor and no furniture other than two old cots. Seated on one of them, a mother cried for her twenty-year-old son. "He had completed seventh standard. He was a karate champion at his school," she croaked. She showed us a photograph of her smooth-faced boy, now gone forever. I couldn't help thinking of my own teenage son, and my heart tightened. "We have three and a half acres. We planted them in sugarcane. The rains failed, and the plants dried up," she explained, tears running down her cheeks. We asked her if they had a well for irrigation. "We have a well," she replied, "but it has gone dry." Like everyone else, they'd borrowed money and couldn't pay back their loans. "We rushed him to the hospital and they tried so hard to save him. They tried. The doctor was a good man, but he couldn't save my son," she sobbed, pressing her *dupatta* to her face. I gave this woman some money. I felt so helpless

before her grief, her destitution. I knew it would only help her for a couple of weeks, maybe a month, but it was what I could do then and there.

A neighbor arrived. She brought her living but maimed son, Nisar Khan, eighteen years old, to see us. He had lost part of his right arm in a grain thresher. "He was paid twenty thousand rupees compensation by his employer. That was a couple of years ago. Can you help him?" she asked. "Can you get him a job?" We promised to put him in touch with Jaipur Limb, a successful artificial-limb charity in Rajasthan.

In Satargaon, we went to the home of Chhaya Sandesh Shirsat, a pretty nineteen-year-old, newly widowed by her husband's suicide. She sat on the floor and nursed her two-month-old son. She had gone home to give birth, as is traditional in India, and her husband had committed suicide when she was gone. "Did he indicate to you that he was having problems?" we asked. "I tried to ask him but we were just recently married," she replied demurely, waving some flies off the baby's perfect face. "He had some debts but he told me my job was to worry about cooking, that his business was not my business. What could I do?" Her aged parents sat on the floor nearby looking utterly lost. I took in their one-room cottage. In a corner was a shrine to Ambedkar and the Buddha. There were framed family portraits on the wall, along with a poster for Indian tennis champ Sania Mirza and a picture of popular film actress Rani Mukherjee in a pair of hot pants.

It was hard to leave these people with only the promise that we would write about what we had seen. They survive on broken rice they get from the government for two rupees per kilo. It's the same rice better-off farmers feed to their chickens. Sometimes, they eat dal. Otherwise, there is only salt and occasionally some onion to flavor the rice.

One of the suicide victims had tried to supplement the family's failing farm with a small stand selling pan, an Indian delicacy of sweet spices often mixed with betel nut rolled up in a green leaf. When that venture failed, he poured kerosene on himself and set himself on fire six days before we arrived. He was thirty years old. After his death,

the family sold off the pan stand for fifteen hundred rupees (about \$35). The father told us he had three acres and had borrowed seven thousand rupees to give to his son. The son had also borrowed money from moneylenders.

"What will you do now?" we asked the widow.

"I will work in the fields. I will sell my labor."

"How much will you earn?"

"Twenty-five rupees per day [sixty cents]."

She looked at her two young daughters, thirteen and eleven. They were both real beauties. Her eyes shone with tears she would not shed. She must have been in her thirties, but she was worn-out, and she looked twenty years older.

The victim's father, Mahadeo Kissan Pimjarkar, told us he harvested a total of three quintals—a quintal is one hundred kilograms or 220 pounds—of cotton from his three acres. He said that he was paid fifteen hundred rupees per quintal. He told us that he had spent four hundred rupees per packet of seed and that each packet covered one and one-half acres, so that he had spent a total of eight hundred rupees on seed. He had only been able to pay for one application of pesticide, which cost him five hundred rupees and didn't save his crop. His total profit was thirty-five hundred rupees or \$75. Mr. Kissan told us they used to grow *jowar* (sorghum) and vegetables but now they only grew cotton, and they had to buy their food. He said they had a well but it had gone dry. He told us the water table had fallen one hundred feet. He said it cost one lakh or one hundred thousand rupees to dig a deeper well, and they just didn't have the money. A little boy in the family of about five or six years was running around, excited by our most unusual visit. He wore a red polo shirt with a Versace Sport logo on it.

All the farmers we met owed money and all of them grew cotton. All of them had tried to grow the new genetically modified Bt cotton, either Monsanto's and its Indian partner the Maharashtra-based company Mahyco's own patented Bollgard brand or a cheaper Indian brand. There were all kinds of seeds from which the farmer could choose: different hybrids, legitimate genetically modified seeds, illegal knockoffs. The genetically modified seeds carried the gene for *Bacil-*

*lus thuringiensis*, a bacterium toxic to many insects including the cotton boll weevil. It is commonly referred to as Bt cotton. The effectiveness of Bt cotton in resisting pests is a matter of debate. Most agree it does not eliminate the need for pesticides, though it may reduce it. Critics worry that genetically modified plants may contaminate the soil and spread their genetically altered genes to other plants, leading to uncontrolled mutations. Bt cotton has also been criticized for its toxicity to a wide range of insects, including helpful insects. Monsanto's Bollgard seeds sell for 1,850 rupees a packet, well above the price of ordinary hybrid seeds and above the price for Indian genetically modified seeds. Traditionally, farmers saved a portion of their seed to plant the next year, but genetically modified seeds are patented, and farmers are not allowed to reproduce them.

In August 2006, Monsanto announced it was taking over Delta and Pine Land, the company that perfected the so-called terminator seed. Terminator seeds are genetically programmed to produce sterile seeds in the plant that grows from them, so that a subsequent generation of seeds cannot be saved and planted. The farmer must buy new seeds every year from the company. Commenting on the acquisition, Monsanto CEO Hugh Grant said, "Delta and Pine Land represents an excellent fit for our company as we look to bring value-added traits and high-quality seed to cotton growers around the world."<sup>3</sup>

Many of the farmers we met began their journey into debt with a bank loan or a loan from a moneylender to plant a first crop of Bt cotton. They believed the Bt cotton would give them better yields. Their first crop failed. There wasn't enough water, or the rains came but not at the right time. The plants turned red with *lalia*, against which Bt cotton offers no protection. In debt after losing their first crop of Bt cotton, they took a bigger risk and tried again. A normal cotton crop couldn't save them, so they felt it was better to gamble and hope for a bumper crop. The second crop failed or delivered inferior results. Some tried a third time. Some killed themselves.

It seemed evident based on the handful of farming communities we visited that small-scale dry farmers would never be able to survive growing cash crops. They didn't have money for the fertilizers and the pesticides these crops required. They had no way of irrigat-

ing their fields, so if the rains failed or came at the wrong time, they were doomed.

It is almost impossible for small farmers in India to borrow from banks. The size of the loans they need don't interest banks. Banks require them to get a certificate from every other bank in the area proving that they don't have any loans outstanding before a bank will lend to them. The farmers can't really do that. They don't know where all the banks are or have transportation or time to go around and visit them all. Most of them are illiterate. Often, they borrow to pay for a religious festival or a marriage in the family. Banks won't lend money for that. So, they turn to private moneylenders, who charge usurious rates.

We went to talk to Madhu Jadhav, a journalist who works out of the Akola office of *Dainik Bhaskar*, India's second-largest Hindi-language newspaper. The office was in a small apartment on the second floor of a residential building in a quiet neighborhood. He told us that most of the moneylenders are themselves farmers, but bigger, better-off farmers. They take the title to the borrower's land as collateral. The honest ones return it when the loan is paid off. Others, less scrupulous, keep the title and there isn't anything the small farmers can do since there was never any written contract and most of them are illiterate. In this way, big farmers are expanding their landholdings. Jadhav also said that many of the suicide victims are drinkers or gamblers. He said that those who work hard do okay, but that the people in the region "are lazy."

As a counterexample, he pointed out that industrious Kathiawari herders bring their cattle all the way to Vidarbha from Gujarat to eat up the waste stalks left in the fields after harvesting. They milk their cows every day, sell the milk, and make a nice bundle before returning home at the end of the season. "There was a severe rain and hailstorm here recently. The Kathiawaris had little children with them, and people offered them shelter, but they refused, saying, 'If my child dies, okay, but I will not let my cattle die,' and they stayed out there with their cattle." I paid particular attention to this story because my family is Kathiawari but I didn't reveal this.

The pastoral and farming life in India is hard and precarious.

Young people in the villages realize that urban Indians their age are living very different lives. Television has made rural Indians aware of life in the cities, even life in other countries. Jadhav said, "The culture has changed a lot because of television. The new environment is such that young men don't want to farm." Even if farmers were doing well, some of the younger generation probably wouldn't want to take up farming. Given the desperate circumstances of the farmers we visited, it is no wonder that so many young men—nineteen, twenty years old—decided their misery, in contrast to the high-flying, consumer-driven lifestyles they see rich, urban Indians enjoying on television, was simply too depressing to bear.

While passing through the city of Amravati, long a cotton-growing center, we came upon mountains of fluffy white cotton waiting beside a cotton gin. We went inside the compound, past the mounds of cotton, to a small 1920s bungalow with a deep veranda to meet the owner, Zubin Dhotiwala. The bungalow was set amidst a pleasant garden that screened the cotton-processing activity. Mr. Dhotiwala welcomed us into his home and happily shared with us his life in the cotton business. We sat in the drawing room where an immense watercooler made the room tolerably comfortable. The toys scattered around belonged, he told us, to his five-year-old daughter, whom his wife had taken swimming. After what we had seen, it seemed fantastic that there existed somewhere nearby an azure swimming pool of clean, cool, chlorinated water.

The cotton gin has been in the Dhotiwala family for five generations. It was originally run by a steam-powered, heavy iron contraption installed by the British. Mr. Dhotiwala has modernized it since then. He told us the rest of his family is in Bombay now, and they keep telling him to leave the old cotton business and come to the city. "But I am quite happy to do this work. I will not leave it," he asserted.

Dhotiwala is a middleman. He buys raw cotton from the farmers, then gins it to separate out the fibers from the seeds. He sells bales of ginned cotton to agents who then take the cotton down to Bombay or Coimbatore. The seeds are sold for oil. He pays the farmers who bring him their cotton according to the length of the staple and the



size of the micronaire as well as how much waste there is mixed in with the lint, as the white fibers are called. "I am paying nineteen hundred to two thousand rupees per quintal depending on the quality. The government is paying seventeen hundred rupees. Earlier, before they reduced the price supports, the government was paying a ridiculous twenty-five hundred to twenty-seven hundred rupees per quintal, and only in the state of Maharashtra. It was not sustainable, but the farmers got used to it, so now they are suffering." He said that the Bt cotton was superior, with improved yield and quality. But he admitted that small dry-farmers could not make it with Bt cotton. "Those farmers who have access to good soil, water, and enough labor are doing well. The small farmers can't make it. Their crops are doomed to fail and this drives them to suicide." He also told us, "Cotton here can't stand up to Gujarati cotton. All these years, the government of Maharashtra's scheme perpetuated inefficiencies. The small farmers here are not educated. There is no way they can compete."

As we talked, bullock carts mounded with cotton passed us as they moved the cotton around the compound. I told him about the conditions we had seen in the villages. He replied, shrugging his shoulders, "They are like pups."

He invited us to meet some farmers he knew who were doing well. "They can tell you a lot." One of them had had an accident with a piece of equipment on his property and was in town at a local hospital awaiting surgery on his leg. Mr. Dhotiwalla placed a call. He hung up and told us that, if we wanted, we could go meet the farmers right then.

We piled in our car, a white Tata Indica, and headed to the hospital. It was a private hospital, clean and apparently well equipped. The farmers were on the third floor, gathered in the injured man's room. There were two brothers, Purushotam Laddha and Omprakash Laddha, and a friend of theirs, Juggal Kishore Rathi. These men were physically larger than the poor farmers we'd seen in the impoverished villages. They were educated. The injured man's sons were there, Harsh Laddha, twenty-seven years old, who was taking over the farm, and Vibhor Laddha, twenty-four years old, his younger brother, who worked for ICICI bank as an insurance salesman. They were both

educated, well dressed, and spoke good English. Their mother came in and served us tea. She was also elegantly dressed. They had migrated to Maharashtra from Punjab three generations earlier and had obviously done well. They told us they grew cotton, wheat, *foor dal*, sugarcane, safflowers, and sunflowers. They each farmed about six hundred acres, two to three hundred times the amount of land owned by the suicide victims.

They blamed the suicides on drinking and gambling. They thought the small farmers had gotten lazy, dependent on government price supports, so that when these were withdrawn, they couldn't cope. But they also admitted that competition was increasing, and that the trend was toward larger and larger farms. Kishore Rathi said, "The problem is water. There is either not enough rain or the rain falls at the wrong time." Omprakash Laddha was adamant that Bt cotton was not to blame: "We get eight to ten quintals per acre with Bt cotton and only three to four quintals with other cotton." I mentioned the man we'd met who got only one quintal of cotton per acre. They admitted that they had access to irrigation and that this made all the difference. They could deliver the right amount of water to the plants at the right time in the plant's life cycle. They were trying to set up drip irrigation but said banks wouldn't lend money for that. Harsh Laddha said that "where the government has helped with irrigation, production has gone up. They have put in some schemes for rain-harvesting, but the rainfall itself has been so less, it hasn't made a difference." Dhotiwalla and Purushotam Laddha argued that farmers had to be careful with irrigation: "In Punjab and Haryana, cheap water and excess use of fertilizer impoverished the soil."

Harsh was confident that farmers would profit more with consolidation. Juggal Rathi agreed: "Segmentation into smaller and smaller farms has decreased production. Consolidation will increase production." These farmers essentially made the same argument about size and efficiency that American agribusiness and other big-business interests make all the time.

However, the vast majority of India's farmers are small landowners who own between one and five acres of land. They have no skills or education they can sell in an urban labor marketplace. When they

are forced off their land, they end up in city slums or as migrant laborers. Sociologists Madhav Gadgil and Ramachandra Guha estimated a decade ago that there were hundreds of millions of what they called ecological refugees in India—one-third of the nation's entire population—who had been forced to leave their ancestral farmlands or forested areas. Pushed out due to the construction of dams, the diversion of water, deforestation, the failure of cash crops, or other forms of resource depletion that made it impossible for them to survive in their rural homes, these people ended up as internal refugees on the margins of urban centers of consumption or as migrants ever on the move in search of a little work, a little food.<sup>4</sup> On our way to the airport in Nagpur to catch a flight back to Bombay, Dilip and I met again with Jaideep Hardikar. He told us that Nagpur's slums were growing 10 percent per year, that eight hundred thousand people were living in slums, and that many of these were displaced farmers.

On June 30, 2006, Manmohan Singh visited Vidarbha. The crisis of farmer suicides had become a big national news story, with fresh deaths reported at least weekly. Addressing suffering farmers, the prime minister assured them, "I have come here to know your plight. I know what pain you are going through. I will see what needs to be done to prevent such a crisis in the future."<sup>5</sup> Mr. Singh promised that all interest due on bank loans would be forgiven in the six worst-hit districts, making farmers eligible for new loans. He pledged to allocate funds for immediate emergency relief, and to investigate why irrigation projects had not been implemented. He also said he "was aware of the need to move away from cash crops" and promised help to generate parallel income streams for farmers.<sup>6</sup>

Last November, India's largest farmers' advocacy group, the All-India Kissan Sabha (AIKS), held a rally in New Delhi. Thousands of farmers from various states in India gathered to demand the government respond to the country's agricultural crisis. One of their demands was a census of farmer suicides. The issue has been taken up by different political parties, and was expected to loom large on the agenda of the 2006 winter session of India's parliament.

## India's Water Crisis

With its population increasing by 18 million people per year and high economic growth, India already has a severe water crisis that threatens to become much worse. The World Bank is projecting that household water use in urban India will double by 2025.<sup>7</sup> Plans to transform Indian agriculture will no doubt also mean higher water use in rural India. Powerful urban, industrial, and agribusiness interests are locked in a struggle with small farmers and Adivasis over water that has resulted in violent confrontations across the country. Jawaharlal Nehru's mid-twentieth-century vision of modernizing his country included the construction of large dams, which he called the "temples of modern India." Hundreds of thousands of Indian farmers and Adivasis have been displaced by dam projects across the country, including the massive Sardar Sarovar dam on the Narmada River in Gujarat. These forcibly displaced persons have realized little if any of the compensation and relocation assistance promised them. Last year, the popular Bollywood star Aamir Khan made headlines when he controversially protested the lack of sufficient compensation for people displaced by the Sardar Sarovar dam. His films were boycotted by urban Gujaratis, who see dams as necessary to the state's progress, and banned by the state's government, which is wholly committed to urban, industrial, and large-scale agricultural interests.

The damming of the Narmada, especially the construction of the Sardar Sarovar dam, is India's most controversial dam project. Author-activist Arundhati Roy has vociferously protested the construction of the dam and written a book about it, called *The Cost of Living*. Dilip D'Souza has also written a book, *Narmada Dammed*, about the subject. Medha Patkar, widely considered to be the most Gandhian of contemporary Indian social activists, fought the dam for many years and led the Narmada Bachao Andolan (NBA) (Save the Narmada Movement). The NBA succeeded in delaying but not ultimately in stopping the dam, which crept up in height from 88 meters in 1999 to 121.92 meters in 2006, following a series of decisions by

India's Supreme Court authorizing incremental increases. With each increase, a wider area behind the dam was flooded, drowning an ever increasing number of villages, temples, farmlands, and forests. Some 320,000 people have been displaced by the dam. Scores of people died during its construction, hundreds more due to the stress of involuntary relocation. Medha Patkar came to the brink of death several times either through fasting or by refusing to move as the waters rose.

Fierce conflict over the Narmada is hardly the only water controversy in India. The states of Karnataka and Tamil Nadu have engaged in strident fights over water rights to the Cauvery River. The Indian government has a highly ambitious—some would say hubristic, others downright crazy—project to link all the rivers of the country via a system of canals. Known as the “linking rivers” project, it has been challenged by environmental groups as an act of supreme ecological folly that would destroy India's natural riverine system. The city of New Delhi has contracted with Degrémont, a division of French water giant Suez, to convey water from the Upper Ganga canal of the Tehri Dam project in Uttar Pradesh through a new Sonia Vihar water treatment plant to thirsty city-dwellers in South and East Delhi. Farmers who depend on this water for irrigation have vigorously protested the project, maintaining that too little water will be left for them. The Sonia Vihar plant guarantees Suez ten years of unobstructed profits. The government is providing Suez with land, electricity, and the cost of the treatment itself to the tune of two hundred crores rupees or about \$45 million to get more water to parched Delhi residents.

The privatization of water is a worldwide trend. The World Bank estimates that water privatization is potentially a \$1 trillion business since the vast majority of the world's people do not now buy their water from private sources. In a major report on India's water crisis, “India's Water Economy: Bracing for a Turbulent Future,” the World Bank shows a clear bias toward privatization in general and of water in particular, stating, “The state needs to surrender those tasks which it does not need to perform, and to develop the capacity to do the many things which only states can do. Competition needs to be introduced in the provision of basic public water services.”<sup>3</sup> Three huge transnational corporations control 40 percent of the world's private

water market: Bechtel, Suez, and Vivendi. Smaller players are jumping in, however, as the lucrative potential of the market in “blue gold,” already valued at \$400 billion, takes off.

Population growth, urbanization, and the planned transformation of India's agricultural economy on an export-oriented agribusiness model are but some of the factors in India's growing water crisis. Groundwater provides 80 percent of India's rural domestic water needs and 50 percent of urban domestic water needs.<sup>4</sup> Water tables are dropping as aquifers are being depleted faster than they can be recharged, and many of these are polluted with highly toxic substances whose removal is simply too expensive for a developing country such as India. Water tables have dropped in some parts of India by as much as 70 percent. Several of the families of suicide victims I interviewed in Vidarbha stated that while they did have wells, these wells had gone dry, and they did not have the money to drill down to the depth now required to tap water.

### *Saving Water, Saving Communities*

Nirupa Bhangar is a lively yet centered woman in her fifties with smiling eyes who has been concerned with India's water crisis for years. An ex-microbiology teacher, turned school administrator, she worked for the Agha Khan Network from 1987 to 1993. Later, she worked with Ion Exchange India, a pioneering water treatment company, as an advisor for setting up their Rural Cell. The experience changed her perspective. She discovered during her work in villages in rural Gujarat that scores of villagers were afflicted with acute fluorosis, poisoning from too much fluoride in their water. “The water table had sunk by eighty percent, and the naturally occurring fluoride was becoming concentrated. There wasn't enough new water coming in to recharge the underground aquifers. People were so sick, they couldn't get up without assistance,” she told me. Nirupa lives on the Worli seafront in Bombay, on a high floor with an unobstructed view of the Arabian Sea. We sat on a tatami mat in her bedroom-cum-office. I could see out pretty far to sea, far enough to note a distinct

line separating the extremely polluted inky brown water close to shore from the more naturally colored steel blue water farther out.

Nirupa told me that 25 million people in India are at risk of poisoning from fluorosis. "Fluorosis leaches calcium from people's bones. Around Ahmadabad, for example, where people are better off and have more calcium in their diet, they aren't affected as badly as in other areas where people can't afford to eat dairy products," she said. Nirupa talked about the other problems in India's groundwater supply: arsenic and iron. "Things have gotten worse since independence. More and more water is being diverted to the cities, either directly for drinking water, or indirectly via products for urban markets that are water-intensive to produce." Nirupa mentioned the ground water problems that had developed in proximity to Coca-Cola's plants in Kerala and Andhra Pradesh.

Wanting to do something that would be effective in addressing India's rural water crisis, Nirupa traveled to Kutch and around Maharashtra visiting water harvesting and conservation efforts, trying to understand what worked and what didn't. She was particularly inspired by her visit to Ralegaon Siddhi, a village transformed by native son and social activist Anna Hazare. By involving the villagers in the construction of a series of check dams, percolation dams, and other water-harvesting measures, Anna Hazare had raised the water tables and insured sufficient water for drinking and irrigation. Ralegaon Siddhi went from a barren, dysfunctional place in the 1970s where illegal liquor stalls plied their wares and crops fizzled under the relentless sun to a verdant, thriving village that today exports vegetables to the Arabian Gulf.

The core lesson Nirupa took from her investigations was that while rainwater harvesting was the solution, it was essential to involve villagers in any measures taken to help them. They had to feel ownership of the project, or it wouldn't work. "A big problem in India is that water management is handled by civil engineers who are not equipped to do community-based work. When the monsoon hit in 2005, for example, when we had such horrible flooding, many dams, ponds, and other water structures were damaged. Since, in most cases, these had been built by the government with no local involvement, no

one in the community bothered to repair them." Nirupa took action "when my *masi's* [mother's sister's] maid came to me and asked me to help her village with an acute water problem." The villagers trekked to her flat in Bombay for a first meeting. In 2001, she helped start a water-harvesting project in the village. A grassroots NGO in the area, SHARE (Society to Heal, Act, Restore, Educate), undertook project implementation. Now, SHARE, in collaboration with SCEESA (Sophia College Ex-Students Association)—of which Nirupa is part of the management committee—is working in sixty villages in Maharashtra. The focus of their work has expanded from water provision to include sanitation and second-cropping. "Where villages have a caste issue or alcoholism or other divisions, we won't start a project until they come together."

One of the typical injustices of caste prejudice in India is Dalits (untouchables) being banned from using the village well by the other villagers. Hindus who hew to traditional notions of caste view any chance contact, including indirectly through food or drink, with Dalits as polluting. Still today in India, a Dalit, particularly in rural areas where traditions die hard, can be killed for accidentally brushing against a caste Hindu. Young couples who dare to fall in love across caste boundaries may be hunted down and killed. In public schools, Dalit children may be allowed into class with caste children, but they often have to sit apart and are made to eat at a distance from the other children. Water shortages disproportionately affect Dalits, since they have last-priority access to vital resources, including water.

Only when villagers have agreed to work together does SCEESA-SHARE adopt the village. A local body, a Paani Panchayat (water committee), is selected to represent the village. This can include the *sarpanch*, the head of the village Panchayat. "Sometimes now the *sarpanch* is a woman." It is particularly important to involve the village's women since women are responsible for finding water for household use. Women in India often walk miles every day in search of water, bringing home only what they can carry in pots on their head. In any case, the villagers have to provide free labor. They fully participate in the construction and learn how to maintain the new systems of water catchment they set up. The program has been so suc-

cessful that people who had left their villages because of survival issues are now trickling back home.

Nafisa Barot is an activist with Urthan, an NGO dedicated to women and water that is active in coastal regions of Gujarat state. What is striking about Nafisa, who comes from a modest village background, is her adherence to the Gandhian principle of deep democracy. She writes, "Gandhi had suggested a way of life that would ensure sustainability and also gender equity and uplift of the underprivileged. The underlying principle of Gandhi's philosophy was people's participation in decision-making, finding local solutions to basic livelihood issues and resolution of conflicts through consensus."<sup>10</sup>

Urthan sponsors check dams, water harvesting, groundwater recharging, the construction of traditional village ponds, and other means of bringing water back to communities that have depleted their natural water supplies to the point of unsustainability. In villages along Gujarat's coast where Urthan is active, the water table has dropped so much, many wells have become contaminated with seawater. Recharging the wells by directing rainfall runoff toward them during the monsoon and other water harvesting tactics dramatically improves the supply of freshwater for affected villages. Water in wells that had become salty becomes sweet again. Nafisa recounts how, time after time, women who began a journey of empowerment by working on a water scheme became confident enough to seek bank loans, set up work collectives, start cooperatives, and demand respect from their families and communities.

M. Dinesh Kumar and Tushaar Shah, two researchers with the International Water Management Institute's South Asia Programme, found levels of fluoride above permissible levels in fourteen Indian states, with up to 65 percent of India's villages exposed to excessive fluoride. They found high levels of salinity in West Bengal and around Delhi, and high iron content in water in the states of Bihar, Rajasthan, Tripura, and West Bengal, as well as coastal Orissa. Arsenic poisoning in West Bengal and Bangladesh, where many people depend on tube wells drilled through naturally occurring arsenic-laden strata, affects up to 36 million people. Nitrate concentrations, due to fertilizer runoff, are above permissible levels in eleven Indian states. Indus-

trial effluents pollute India's water with heavy metals such as lead, cadmium, zinc, and mercury. Little is being done to clean India's underground aquifers of this gross pollution. "India is too poor to afford some of the technologies that are successfully tried out in the West, especially [the] United States, because they are prohibitively expensive."<sup>11</sup> For a developing country such as India, community-based efforts to recharge aquifers and better manage water are the best hope for addressing the rural water crisis.

### *The Coming Meltdown*

India did not create global warming, but global warming will devastate India. Much of India's population is concentrated along the country's extensive coastline. Tens of millions of people stand to be displaced from coastal areas if sea levels rise as predicted. A landmark report released last fall by the UK's Chancellor of the Exchequer, Sir Nicholas Stern, warns that even the Kyoto Protocol does not go nearly far enough to avert an impending global catastrophe due to climate change. He urges that governments act immediately, spending 1 percent of GDP or 184 billion British pounds, to rein in the production of greenhouse gases. If they do not, he warns, the costs will be greater perhaps than humanity can bear.<sup>12</sup>

The impact of global warming will be felt far more in the global south, including in India, than in the north. The economic toll, not to mention the human toll, is almost too frightening to contemplate. As with many other problems India faces, the sheer magnitude of the damage unmitigated global warming could do paralyzes the mind. But India has within its grasp the technology to find solutions to what may be the most serious crisis humanity has ever faced, and the growing global clout to put pressure on the worse offenders, the United States and China, to act as well.

In 2006, global temperatures climbed within one degree Celsius of the warmest they have been in 1 million years. Temperatures were warmer than at any other time during the twelve-thousand-year-long interglacial period during which civilization as we know it developed.

While warming has been most pronounced in the far north, the Indian Ocean has also become noticeably warmer, as have the Himalayas. The current trend is for more warming, a situation with potentially devastating effects for India's growth story and the future of its people.

Commenting on a report released in the September 26, 2006, issue of the *Proceedings of the National Academy of Sciences*, James Hansen of NASA's Goddard Institute for Space Studies issued this warning: "If further global warming reaches two or three degrees Celsius, we will likely see changes that make Earth a different planet than the one we know. The last time it was that warm was in the middle of the Pliocene, about 3 million years ago, when the sea level was estimated to have been about twenty-five meters (eighty feet) higher than today."<sup>13</sup> In his film and book *An Inconvenient Truth*, Al Gore warns that if the Arctic melts—and there are clear signs that that is exactly what it is doing—60 million people will be displaced from Calcutta and coastal West Bengal and Bangladesh.<sup>14</sup> In July 2005, Bombay was deluged by thirty-seven inches of rain in twenty-four hours, the heaviest downpour any city in India had ever experienced. More than two thousand people died. In the last week of August 2006, the drought-prone district of Barmer, Rajasthan, was inundated with 750 millimeters of rain, five times more than the total annual average. One hundred thirty-nine people and forty-five thousand head of cattle died.

While each extreme weather event can be explained in isolation as exceptional, and history has recorded extreme weather events for centuries, there is no longer any denying these events are increasing in frequency and severity. In 2005, the United Nations World Meteorological Organization reported that 90 percent of all natural disasters occurring between 1992 and 2001 were due to extreme weather events, which killed "622,000 people, affecting 2 billion more, devastating arable land and spreading disease. The total volume of economic losses over the same period is estimated at \$450 billion."<sup>15</sup> In a special cover issue on global warming in September 2006, *The Economist* magazine warned, "Arctic sea ice, for instance, is melting unexpectedly fast, at 9 percent a decade. Glaciers are melting surprisingly

swiftly. And a range of phenomena, such as hurricane activity, that were previously thought to be unconnected to climate change are being increasingly linked to it."<sup>16</sup>

Temperatures in the Himalaya mountains, the fabled "roof of the world" that includes the highest peaks on earth, have risen in recent years by one degree Celsius. The Himalayas have the highest number of glaciers outside the polar regions. These glaciers are the source of water for 2 billion people. Glacial lakes form a particular hazard: when ice dams suddenly give way, everything is swept away below, as villagers in Nepal have tragically experienced. These incidents have increased by a factor of ten during the past twenty years. As of 2005, twenty-four glacial lakes were in danger of bursting in Bhutan, and twenty-four more in Nepal.<sup>17</sup> As glaciers melt away, the flow of water into the region's major rivers will decline, reducing the flow of water through hydroelectric dams, with a loss of energy the region can ill afford.

### *Pesticide Poisoning*

Pesticide and insecticide use in India is among the heaviest in the world, with 165 pesticides registered. Their use has steadily risen, according to a 2001 report from the Indian Council of Medical Research. DDT, BHC, carbamate, endosulfan, as well as lindane, are produced and used in India and are all present in India's surface and groundwater. Pesticides have provided benefits to India, no doubt. India's tropical climate subjects it to several insect-borne diseases, including malaria, filariasis, dengue, encephalitis, cholera, and typhus spread by human lice. DDT is credited with reducing the annual incidence of malaria from 75 million cases in 1952 to 2–4 million currently. Pesticides were a key component in the Green Revolution, which, with a combination of new hybrid seeds, synthetic fertilizers, irrigation, and pesticides, raised crop yields dramatically during the 1960s and 1970s. However, a steep price has been paid for those yields. Residues of DDT, HCH, and other pesticides have been detected in human and animal tissues, in water, and in air around the

world. The campaign to save the American bald eagle led to the 1972 ban on DDT in the United States, significantly reducing but not eliminating its U.S. presence. Levels of DDT and HCH are particularly high in India, as seen in laboratory analyses of samples of blood, fat, and breast milk.

According to the Indian Council of Medical Research report, "Perusal of the residue data on pesticides in samples of fruits, vegetables, cereals, pulses, grains, wheat flour, oils, eggs, meat, fish, poultry, bovine milk, butter and cheese in India indicates their presence in sizeable amounts."<sup>18</sup> The scientists identified HCB, a fungicide, DDT, and HCH in the food they sampled. These chemicals have been linked to cancer and to hormonal disruptions that can harm fertility and have led in wild animal populations, especially among amphibians, to strange hermaphroditic mutations.

Chemical pesticides were an offshoot of the chemical weapons industry and were not developed for commercial use until after World War II. Of all the pesticides posing dangers to human health, lindane is widely acknowledged to be one of the worst. Lindane, a neurotoxin, is an organochlorine in the same family as DDT. High levels can cause convulsions and death. Exposure to lower levels can cause cancer and disrupt the normal hormonal system. Fifty-two countries have completely banned the production and use of lindane. The United States is "using up" 230,000 pounds yearly in seed treatment products and still permits its use to treat head lice. India continues to manufacture lindane.

The Centre for Science and the Environment (CSE) in New Delhi published a report in 2003 citing high levels of pesticide residue in India's food supply, including soft drinks manufactured by Coca-Cola and PepsiCo in India. India's Joint Parliamentary Committee confirmed CSE's findings and recommended that standards be set up for the soft-drink industry. Last year, CSE released a new report, charging that levels were not only still high, they had increased over the 2003 levels. Among the pesticides found in the soft drinks were high levels of lindane.

The reaction from the U.S. government and India-U.S. business groups was swift and aggressive. Undersecretary for International

Trade Franklin Lavin warned, "This kind of action is a setback for the Indian economy," and said, "In a time when India is working hard to attract and retain foreign investment, it would be unfortunate if the discussion were dominated by those who did not want to treat foreign companies fairly."<sup>19</sup> Prabhakar Bothireddy, president of the Indo-American Chamber of Commerce, fretted about sending "the wrong message to investors at a time when there are vast opportunities for businesses in both countries to work together." With rapidly growing economic, military, and strategic ties and the biggest-ever U.S. trade delegation planned for later in 2006, CSE's report targeting American soft-drink giants hit like a bombshell. India's Supreme Court added fuel to the fire when it gave the companies six weeks to reveal their secret recipes in order to find out why such contamination might have occurred. Sensing political blood, opposition parties on the left and the right condemned the companies—potent symbols of Western capitalism and consumer culture—in order to elevate themselves in the eyes of alarmed Indian voters. Several states immediately banned the sale of Coca-Cola's and PepsiCo's soft drinks.

Coca-Cola famously left India in 1977 rather than reveal its secret formula. The company's return in 1993 was a symbol of India's rehabilitation to the global marketplace, and a sign that India was again safe for U.S. business. Though India accounts for only 1 percent of Coca-Cola's global soft-drink sales, the Indian market's potential is perceived to be enormous, and India is part of the company's long-term strategic plan. Coke will work hard to stay in India, but it will never publish its secret recipe.

The real disappointment in the whole debate was that all parties were guilty of taking polarized positions: Coke is an evil sign of Western exploitation versus Coke is a terrific sign of India's joining the advanced Western world. The situation is complicated and requires a more nuanced approach. It is little consolation to exonerate Coca-Cola on the basis that India's sugar and water are the real culprits without opening honest, public debate over how to address the serious problem of pesticide pollution not only in India but around the world. This problem is far beyond the capacity of Western soft-drink companies to solve, but it is also true that India faces severe water and

environmental problems that soft-drink manufacturing does nothing to remedy.

Unfortunately, the pesticide controversy comes on top of other woes for Coca-Cola in India. It has been accused of depleting the underground aquifer at its plant in Plachimada, Kerala, lowering the water table to depths local villagers can no longer tap. Village women must make long treks for water, which they carry in vessels back home, while truckload after truckload of bottled soft drinks leave the plant. Coca-Cola has also been accused of dumping sludge, a by-product of soft-drink manufacturing, on farmers' land and along a nearby canal. Local residents have complained about the noxious smell of this substance.

The cola controversy in India stirred many issues. First of all, in a country where so many people lack access to safe drinking water, charges that one of the world's most powerful transnational corporations is converting water—for which it pays nothing and which it is accused of taking from poor local residents—into soft drinks too expensive for these residents to purchase simply doesn't look good, whatever the truth. Second, as CSE's report, like that of the ICMR, pointed out, unsafe pesticide levels are rampant in India's food supply. It would be a miracle if a soft-drink plant tapping groundwater located in an agricultural area in India produced a product that was free of any pesticide pollution. In India, sugar, a key ingredient in Coca-Cola and Pepsi, is also contaminated with pesticide residue. It is hardly inconceivable that the combination of pesticide-contaminated sugar with pesticide-contaminated water could result in pesticide-contaminated soft drinks. According to an article that appeared in the *New York Times* when the controversy broke last year, there is an ongoing debate in India about "how to cleanse sugar of pesticide traces, and a recognition that India's groundwater generally is so badly contaminated that most food products contain some pesticide residue."<sup>20</sup>

Coca-Cola India refuted the results of CSE's analysis, citing an independent laboratory report that showed its soft drinks manufactured in India met EU standards. CSE stood by its results.<sup>21</sup> This is where the matter stood when this book went to print.

Unfortunately for Coca-Cola, U.S. corporations have a long and shameful history the world over of running slipshod over environmental and consumer-safety considerations. Government-imposed standards have been the only way to force many companies to curb pollution or respect the welfare of ordinary citizens and communities. In many cases U.S.-based companies have relocated to countries where the environmental standards, labor laws, and other hard-won, beneficial restraints and regulations of advanced democracies are less rigorous or less efficiently enforced.

Moreover, India has had some high-profile and emotionally charged negative experiences with U.S. corporations.<sup>22</sup> The most sensational of these was the disastrous 1984 accident at a chemical plant in Bhopal. At the time of the accident, this Union Carbide plant was manufacturing pesticide. A leak of toxic gas killed seven thousand people, including many children. Another fifteen thousand died as a result of their exposure. The exact number of victims, including people with chronic illness or permanent physical damage, remains undetermined, with estimates ranging from one hundred thousand to half a million. India unsuccessfully sought extradition of then Union Carbide CEO Warren Anderson. To date, no one has been held responsible.

The Bhopal toxic-gas leak remains one of the worst industrial accidents in history. Union Carbide and Dow Chemical Company, with which it merged in 2001, have denied all responsibility. The site of the leak has never been cleaned up. Amnesty International issued a scathing report in 2004 on the twentieth anniversary of the disaster, charging that the "Bhopal case illustrates how companies evade their human rights responsibilities."<sup>23</sup> As U.S. business interests in India increase, one hopes that a greater sense of responsibility to local communities will prevail.

### *A Second Green Revolution*

The Green Revolution that transformed agriculture in the last century was an American invention. It began in 1944 with a project



## Piagetian Stages

Identify the stage of cognitive development of the person described in each vignette. Explain.

1. Emily is asked whether she has a sister. She says yes. She is asked whether her sister has a sister. She says no.
2. Sarah is at a slumber party where some of her friends are smoking cigarettes. They suggest that she try smoking to help keep her weight down. Sarah imagines the possibility that smoking might work. She also imagines getting old and having lung cancer. She declines the invitation.
3. Tim stood right in front of the TV to watch the cartoon. His mother asked him to move so the rest of the family could watch, too.
4. Sam's favorite class is history. He likes to debate topics such as the death penalty and whether or not the government should reinstate the draft.
5. The babysitter can keep Maurice entertained for an hour with the game of peek-a-boo.
6. Jenny is fearful that Santa Claus will bring her a lump of coal, so she tries hard to behave.
7. Jermaine wonders how Santa Claus can land his sleigh on the roof. He cannot imagine how Santa will squeeze down his chimney.
8. Charles slowly adds 3 and 1. He takes just as much time to add 1 and 3.
9. If you ask Jermaine to add 9 and 8 and next to subtract 8 from 17, he answers both questions quickly and accurately.
10. Dawn's mother carefully poured the same amount of juice into a short squat glass and into a tall narrow one for Dawn's brother Jack. Dawn started to cry when her mother gave her the short glass.

## Piagetian Stages

Identify the stage of cognitive development of the person described in each vignette. Explain.

1. Emily is asked whether she has a sister. She says yes. She is asked whether her sister has a sister. She says no.
2. Sarah is at a slumber party where some of her friends are smoking cigarettes. They suggest that she try smoking to help keep her weight down. Sarah imagines the possibility that smoking might work. She also imagines getting old and having lung cancer. She declines the invitation.
3. Tim stood right in front of the TV to watch the cartoon. His mother asked him to move so the rest of the family could watch, too.
4. Sam's favorite class is history. He likes to debate topics such as the death penalty and whether or not the government should reinstate the draft.
5. The babysitter can keep Maurice entertained for an hour with the game of peek-a-boo.
6. Jenny is fearful that Santa Claus will bring her a lump of coal, so she tries hard to behave.
7. Jermaine wonders how Santa Claus can land his sleigh on the roof. He cannot imagine how Santa will squeeze down his chimney.
8. Charles slowly adds 3 and 1. He takes just as much time to add 1 and 3.
9. If you ask Jermaine to add 9 and 8 and next to subtract 8 from 17, he answers both questions quickly and accurately.
10. Dawn's mother carefully poured the same amount of juice into a short squat glass and into a tall narrow one for Dawn's brother Jack. Dawn started to cry when her mother gave her the short glass.