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THE POVERTY LAB

Transforming development economics, one experiment at a time.

BY IAN PARKER

Esther Duflo with Rwandan coffee farmers. A colleague has described her approach to alleviating poverty as "a new economics being born."
PHOTOGRAPH BY PIETER HUGO

Esther Duflo, a thirty-seven-year-old professor of development economics—the economics of poor countries and poor people—runs field experiments that measure different ways to save the world. In February, she went to Long Beach, California, to give a presentation at TED, an annual conference devoted to "ideas worth spreading." Her demeanor was brisk and unsmiling. "I'm short, I'm French, I have a pretty strong French accent," she began. Then she showed a slide of a neighborhood in Port-au-Prince that had been knocked down in the recent earthquake. "There's something like a Haiti earthquake every eight days," she said. That is, twenty-five thousand children around the world die of preventable causes every day. How should the developed world respond? With more aid? She showed a graph that plotted the billions in development aid given to Africa in recent decades, along with the continent's G.D.P. per capita over the same period. Aid had risen sharply; G.D.P. had not. But the statistics revealed nothing about cause and effect, Duflo said. Without this money, Africa might have turned out better, or worse, or the same. "We have no idea," she said. "We're not any better than the medieval doctors and their leeches." A slide of a leech.

Eight days later, Duflo was back in her office at M.I.T., in Cambridge. There was a view of the Charles River, and the central heating made plaintive, human sounds. She fiddled ceaselessly with a binder clip; though she was sitting on a narrow office chair, she managed to pull her legs up under her. Her manner mixed intellectual assurance with slight social impatience. (A favorite English phrase: "Give me a break.") Pinned to the door was a poster, in Bengali, related to work she had done in India on local elections; she translated the text as "Together we can talk and solve our problems."

She wondered if her references to Haiti at TED had been "a bit cheap." But, she said, "I'm already understated, and not very funny. I have to be a little in-your-face." She added, "I had two dinners with Bill Gates in two days. It was *efficient*." She laughed, to acknowledge her fondness for statistical discipline, and for reliable data in great bulk

—a preference for the measurable that can approach self-parody. Her response to almost any question about the future is a frown of bemusement and the words "How would I know?"

But Duflo also shows hints of idealism. She is a left-of-center French intellectual with faith in redistribution, and she subscribes to the optimistic notion (which, perhaps, runs ahead of firm data) that tomorrow might turn out better than today. Along with a thing for rock climbing, and for music (classical, with a pop-music exception made for Madness, the British group), this seems to be what fills Duflo's head: the thought of doing good science, and the thought of doing good. And she is in large measure responsible for the emergence of a new, and fashionable, strand of academic study that combines these instincts. She and her colleagues in the Abdul Latif Jameel Poverty Action Lab (J-PAL), which she co-founded at M.I.T., in 2003, follow a line of pragmatic idealism, where you must first believe that there's something to be done about poverty—not all economists would agree—and then you try to do it.

Within economics, Duflo and her colleagues are sometimes referred to as the randomistas. They have borrowed, from medicine, what Duflo calls a "very robust and very simple tool": they subject social-policy ideas to randomized control trials, as one would use in testing a drug. This approach filters out statistical noise; it connects cause and effect. The policy question might be: Does microfinance work? Or: Can you incentivize teachers to turn up to class? Or: When trying to prevent very poor people from contracting malaria, is it more effective to give them protective bed nets, or to sell the nets at a low price, on the presumption that people are more likely to use something that they've paid for? (A colleague of Duflo's did this study, in Kenya.) As in medicine, a J-PAL trial, at its simplest, will randomly divide a population into two groups, and administer a "treatment"—a textbook, access to a microfinance loan—to one group but not to the other. Because of the randomness, both groups, if large enough, will have the same complexion: the same mixture of old and young, happy and sad, and every other possible source of experimental confusion. If, at the end of the study, one group turns out to have changed—become wealthier, say—then you can be certain that the change is a result of the treatment. A researcher needs to ask the right question in the right way, and this is not easy, but then the trial takes over and a number drops into view. There are other statistical ways to connect cause and effect, but none so transparent, in Duflo's view, or so adept at upsetting expectations. Randomization "takes the guesswork, the wizardry, the technical prowess, the intuition, out of finding out whether something makes a difference," she told me. And so: in the Kenya trial, the best price for bed nets was free.

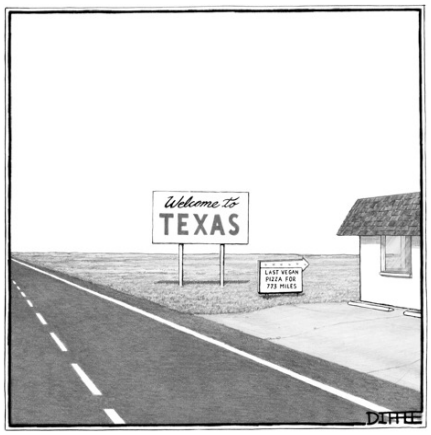
For work based on such experiments, Duflo won this year's John Bates Clark Medal, for the best economist in America under forty—a Nobel-in-waiting. Last year, she received a MacArthur "genius" fellowship, addressed a committee of the General Assembly at the United Nations, and presented lectures at the Collège de France, in Paris, the youngest person to have done so. (A British newspaper headline: "STEP ASIDE, SARTRE: THIS IS THE NEW FACE OF FRENCH INTELLECTUALISM.") In France, two books based on those lectures became best-

sellers; in America, Duflo was included in *Foreign Policy*'*s* survey of the Top 100 Global Thinkers. In large part thanks to J-PAL, randomized evaluations are becoming popular at aid agencies and at the World Bank. And J-PAL itself has expanded to the point where it is generating counter-revolutionary grumbles from scholars: Is this really economics?

Duflo recalled one of her TED-conference dinners with Bill Gates: twenty people were present, among them Jeff Bezos, of Amazon; Nathan Myhrvold, the former Microsoft executive; Vinod Khosla, formerly of Sun Microsystems; and "the Facebook guy." She spent some time that evening trying to calculate the per-capita income of the group but lost track. "I'm not good with money," she said. Duflo found the socializing at TED to be "a bit high-pressure. I'm not very social, in the sense of cocktail-party social. I don't like to talk to people I don't know." But she is comfortable when discussing her work, and her scientific approach clearly resonates with the philanthropists of the Internet age. Gates later pressed M.I.T. to make Duflo's undergraduate course on poverty available online, and told her, "We *need* to fund you."

On a misty afternoon several weeks earlier, on a narrow dirt road running through a village in Rajasthan, in northwestern India, Duflo had been surrounded by dozens of schoolgirls trying to learn how to say hello in French. "One, two, three: *bonjour!*" Duflo said. "One, two, three: *bonjour!*" the girls said back, laughing. None of them had heard of France. Duflo was dressed in a shalwar kameez, with a pale-orange scarf over her shoulders. The light was strange, giving every view—small single-story homes with corrugated-iron roofs, flat farmland behind, cows and carts—the texture of a nineteenth-century landscape painting. Earlier, Duflo and a number of others, all holders of advanced degrees, had debated whether the spectral disk of light above our heads was the moon or the sun.

Duflo was midway through a fast-paced trip to India and Rwanda—a series of cramped car rides and short flights on budget airlines, during which she always took from her bag an English translation of "2666," the sprawling novel by Roberto Bolaño, and opened it, with relish, but then found herself pulled into the activities of a professor in demand: judging a paper submitted to a scholarly journal that she edits; responding to e-mail requests for a guest lecture. She was also working on a book, as yet untitled, about the economic lives of the poor. It will be pitched at an alert general reader, she said: "We're not talking 'Freakonomics,' but there won't be equations."



Her co-author is Abhijit Banerjee, a professor at M.I.T., a co-founder of J-PAL, and now, like Duflo, one of its directors. (A third founder, Sendhil Mullainathan, has moved to Harvard but remains affiliated with J-PAL.) In January, Banerjee was one of a number of colleagues whose travels coincided with Duflo's for a few days. A decade older than Duflo, Banerjee has a loping, liquid walk and an ironic manner; he grew up in Calcutta, and he was Duflo's guide on her first trip to India, in 1997. "She's very comfortable in India," he told me. "She doesn't get information overload." Her affection for the country is evident: she returns at least once a year, and in Cambridge she is surrounded by Indian friends and colleagues. In her apartment, in Beacon Hill, where she lives alone, she cooks Indian food in a kitchen remodelled in a spiky modern spirit by an Indian architect. And it is largely in India that Duflo has done the work on which her reputation stands.

In 2003, for example, she helped devise a randomized trial that addressed the problem of absentee teachers in schools run by an Indian nonprofit group. The trial involved a hundred and twenty schools. In sixty of them, teachers were asked to have a photograph taken of themselves, with their students, at the start and the end of each school day, using a tamper-proof camera that time-stamped each image. Pay was then adjusted to attendance. Compared with a control group of the same size, the photographed teachers were half as likely to be absent. They did not resent the cameras, but it wouldn't have troubled Duflo if they had: "Who do you care about? Lazy teachers who show up sixty per cent of the time, or the kids? O.K., I care about the kids." Because the teachers turned up more, they taught more, and their students performed better on tests. Banerjee has described watching Duflo work on a follow-up experiment, and thinking that he was witnessing "a new economics being born."

In the village, Duflo and her colleagues were waiting for a play to begin. We were an hour or so from the city of Bharatpur; judging by Duflo's studies of other districts in Rajasthan, local families were probably living on no more than a few dollars a day, and had no cell phones, no TV, and limited literacy. Across the road, a van with a loudspeaker tied to its roof was parked next to a raised patch of ground. A red mat had been laid out, creating a stage, and three musicians—playing drum, cymbals, and hand-pumped harmonium—sat cross-legged on it. A hundred or so villagers gathered

in the road to watch, men on the left, women and children on the right. Crows squawked. In the van's passenger seat, a young man struggled, like Superman, to change into women's clothes.

The musicians began to play, and the loudspeaker let out a shocking jolt of sound. Two actors walked onstage: the man dressed as a woman—rural Rajasthan shares with Elizabethan England an unease about females onstage—and a round, middle-aged man, a master of ceremonies, wearing a maroon jacket, a loose maroon turban, and white pants. He puffed out his chest and, in a good-humored performance, sang and danced, directed a puppet show, mimed a motorbike crash, and delivered a good amount of talk—every line shouted into a microphone—about the wisdom of voting for a village leader who is not corrupt, and who might be a woman. The audience was attentive, at least for the first hour. At one point, we all stepped out of the way to allow a tractor to pass through the village.

It was odd to recall that the script had recently been assessed by a human-subjects ethics committee at M.I.T. (A relevant form asks, "Will radiation or radioactive materials be used?") The play was one small part of a labor-intensive J-PAL experiment that Duflo had helped design. In conjunction with a local organization, J-PAL had set this morality play in motion, hiring ten troupes of actors, each one identically equipped: ten vans, ten maroon turbans. A local election was imminent, and in recent weeks these performers had been visiting village after village; among them, they performed the same show, or some close variant of it, four hundred and sixty times.

This is how Duflo asks a question about women's empowerment. It is also one way that she responds to those who tell her that although they can appreciate experimental evaluations of bed nets or textbooks, they struggle to understand the idea in the messier context of human behavior and politics. (Duflo recalled an emblematic exchange, during a meeting at the World Bank in New Delhi. After Abhijit Banerjee made a passing comment—"Randomized evaluation can be taught, it is not nuclear physics"—a UNICEF official stood up and said, "Studying human beings is *much* more complicated than nuclear physics.")

On a long drive the previous evening, with the taxi-driver playing a CD of old Bollywood music, Duflo sketched the history of the study. It builds on two previous studies and on a 1993 amendment to India's Constitution requiring that a third of the country's sarpanch positions—a sarpanch is a leader of a local council that controls between five and fifteen villages—be reserved for women. In 2000, in the glancing moment between Duflo finishing her Ph.D. at M.I.T. and accepting tenure there, she began to work with Raghabendra Chattopadhyay, an economics professor in Calcutta, and together they confirmed that in the state of West Bengal the selection of women-only seats had been made with fastidious randomness. It would be possible, then, to extract excellent data from a social experiment that had been designed by others. Was it possible to distinguish a woman's village from a man's village?

Surveyors hired by Duflo and Chattopadhyay visited hundreds of villages in West Bengal to determine the policy priorities of women and the spending habits of each village chief. The data showed that the supply of drinking water was a priority for women voters, and that an average female leader invested more in drinking water than a male leader did. Women had been empowered: the female sarpanches were not acting merely as stooges for their husbands or fathers-in-law, as Indian commentators often claimed.

One might approve of the findings from the point of view of redress, but redress doesn't register as an economic gain. The quota system did not lead to over-all economic efficiencies. And, as Duflo put it, if a policy doesn't "make the pie bigger, you cannot say unambiguously it is a *good* policy."

In 2006, Duflo and several colleagues returned to West Bengal for a second experiment. They had made several tape recordings of an identical political speech—some versions delivered by men, others by women—and their subjects heard one of them. Duflo found that, in villages that had never experienced women leaders, the hypothetical women speechmakers were judged to be less competent. But in villages that had been led by a female sarpanch there was no such bias. The findings were the first credible evidence Duflo had seen for the idea that public policy can influence voter prejudice. "It really changed my opinion on whether or not it's a good idea to have a quota for women," Duflo told me. Any community that starts considering women candidates for the first time doubles the size of its leadership pool, and should therefore expect policy benefits. Economists can recognize that as a gain. Or some economists: when the paper that Duflo and her team had written was submitted for publication, an anonymous referee was uncomfortable about how many steps of argument were needed to get from the data to the payoff, and expressed doubt that the authors were "saying anything about economics."

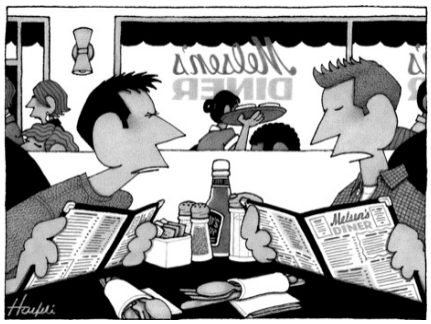
In the new experiment involving actors, Duflo and her co-investigators were exploring whether merely hearing information about the worth of women, in the form of an afternoon's entertainment, could change perceptions as much as living in a village where a female leader had governed. (Much of Duflo's work has come to be about prompts—or incentives—to social change.) Some villages, chosen randomly, would see the play; some would not. J-PAL would return to the four hundred and sixty villages several weeks later, and measure voter attitudes. Were the playgoers now less biased? "If it has a positive effect, it means we can educate people," Duflo said. "If it has no effect, then it will be interesting, too, because it will show that you have to get them to *experience* women in action."

At the performance that afternoon, a J-PAL colleague named Clement Imbert—a dashing Frenchman wearing what may have been the only thick-knit polo-necked sweater in a hundred miles—whispered a running translation from the Hindi. He knew the script well, and was alert to departures from it; there were a few moments of crowd-pleasing bawdiness, including an emphatic thrust of the hips. "What the fuck?"

Imbert said. (All shows are videotaped and reviewed, partly to keep an eye on this kind of drift.) The show ended with a cheery, unscripted song: "J-PAL's coming through the village / giving calendars and giving advice!"

As we left, driving through mustard fields, Duflo said, "That made me happy." We drove to catch the same show, performed by another troupe, in a village nearby.

"I refuse to squabble in public until we're legally married."



Duflo was not dour, and at times she was even playful. Trying to keep warm in a highway gas station, during a long drive in dense fog, she sang a French nursery rhyme, "La Bataille de Reichshoffen," while doing the dance that goes with it. (As she later put it, this involves moving various "subsets" of one's limbs, in sequence.) There were occasional signs of professorial distractedness: it took Duflo two days to connect a pleasing new lightness in her luggage to the fact that she had accidentally left behind, in the city before last, most of what she had been carrying. Mainly, though, she was purposeful: a steady gaze; an orderly mind (she would often ask for "a second of focus" while collecting her thoughts, to fend off the sins of repetition and digression); and a tolerant, regretful sympathy for those around her whose heads were filled with idle thoughts or low-quality data. In a government office in the state of Orissa, Duflo saw a printed sign that read "GOSSIPING OFFENDS ALL PLEASE AVOID IT NOW"; she snapped a photograph and kept it as her cell phone's screen image.

In India, she took seven flights in eleven days, and one overnight train ride, with the purpose of looking at J-PAL experiments under way—two hundred and six of them have been launched worldwide since 2003, including some in the developed world. She also met with people, often in government, who might make it possible to start new ones. On a plane to New Delhi one evening, the Bolaño unopened on her tray table, Duflo took a moment to recall her childhood idea of what it was like to be poor in a developing country. "I had this sense of people completely hapless, who have no control of anything, for no fault of their own," she said. She imagined the poor as "people who have to walk ten kilometres to find some dirty water, and then drink it and *immediately* die of cholera." She laughed.

Her adult view is that the poor are very clever about money, except when they are not clever at all; they are "incredibly smart" about day-to-day financial matters, "because the cost of errors is much bigger," but "so busy doing this effort, and optimizing on

some margin, that they might entirely miss some huge elephant in the room," like the importance of buying fertilizer for their crops, or immunizing their children. She referred to the old joke, made at the expense of economists who assume that all consumers are rational, about the person who sees a hundred-dollar bill in the street but is restrained from picking it up by the thought that if it were real someone else would have taken it. "If you're a development economist—at least, in my view—you realize there are many, many, many hundred-dollar bills lying on the sidewalk," she said. "There are efficiency gains waiting everywhere."

Her childhood view of the poor, Duflo said, was shaped by "Protestant left-wing Sunday school" and by the international response to the Ethiopian famine of the mid-eighties (Band Aid, Live Aid). And it was shaped, too, by the work done by her mother, a doctor, who, from the late seventies onward, left her pediatric practice in Paris for a few weeks each year to treat child victims of war, first in Western Sahara and later in El Salvador and Rwanda. Duflo described her mother as "a generous human being to the point where it's unnerving for the rest of us."

Duflo was a serious, independent middle child in a high-achieving family. When she was five, her father, a math professor, showed her how to take a train by herself. From that age, she rode alone on weekends from the family's house, west of Paris, to visit a cousin who lived closer to the city. "I can't really remember a time where I didn't do whatever I wanted to do," she said. "Partly because my parents are laid-back, and partly because I was not very willing to let anybody interfere with my plans." At eight, she decided to become a historian; after high school, she began the *classes préparatoires*, the two years of superhuman study that readies students to enter one of France's *grandes écoles*—in her case, the École Normale Supérieure, in Paris, where the country's cleverest twenty-year-olds live, take classes, and receive a state salary.

She began a degree in history, as planned, but combined the subject with economics, in part to capitalize on a keenness for math. But, Duflo said, "I hated economics. I thought it was moronic." And in her second year at university she questioned her future as a professor, and began considering a career in the civil service, or politics. It was in this mood that she spent ten months in Moscow, starting in 1993. She taught French, and worked on a history thesis that told how, in the Soviet Union, "they had used the big construction sites, like the Stalingrad tractor factory, for propaganda, and how propaganda requirements changed the actual shape of the projects." (In high school, Duflo had taken up Russian when most others chose English, figuring that she was bound to end up with English skills eventually; this is how she explains her strong accent in English, which sits oddly alongside her easy command of the language.) In Moscow, she spent her days watching old Soviet newsreels. "I liked doing it, but I thought it was a little bit lacking in discipline," she said. "You don't have enough data points." She was also aware of a nagging undercurrent in her thought—"that what I should really do in my life is help the poor. I'm just researching propaganda in the Soviet Union! I mean, come *on*."

In Moscow, she also worked as a research assistant for a French economist then connected to the Bank of Russia, and, separately, for Jeffrey Sachs, the American economist then at Harvard, who was advising the Minister of Finance. These research posts helped her to conclude that "economics had potential as a lever of action in the world," and that she could satisfy academic ambitions while doing "things that mattered." Or, to put it in a way that Duflo did not: to follow the careers of both parents.

She returned to Paris and finished her degree, in 1994. Then she and her boyfriend at the time, Emmanuel Saez, both enrolled at M.I.T. (Saez was also studying economics; he now teaches at Berkeley, and was last year's winner of the Clark Medal.) Duflo, unfamiliar with development economics, which was barely taught in France, took Abhijit Banerjee's class. "After a month, I was sold," she recalled. "It was clear that this was my path." Banerjee, who became one of her thesis advisers, said that Duflo was "extraordinarily bright, but not like your average pushy student. She didn't speak unless she had something to say."

Banerjee was known for questioning the dominant economic model of the poor, which was that they were "poor but efficient"—that is, they acted with the same freedom and self-interest as the wealthy. That paradigm began to weaken, Duflo explained, under the weight of "the very essential revelation that even if you take people who are entirely rational, *just being poor* changes your set of opportunities. For example, you cannot borrow if you're poor, because you have no collateral. Abhijit is one of the key theorists of that."

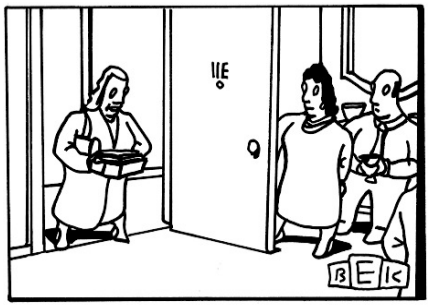
A long-term trend in economics toward abstraction was abating by the end of the nineteen-eighties, but Duflo could see little empirical work being done in development economics. And there was certainly almost no interest there in randomized experiments, a method that was first used in drug trials in the nineteen-forties, and later sometimes used in large-scale and expensive public-policy evaluations in the United States and elsewhere. But Joshua Angrist, a labor economist who was another one of Duflo's thesis advisers, exposed her to work that made use of "natural" experiments; in a widely admired dissertation, Angrist had described the economic aftereffects of serving in Vietnam, making use of the randomness of the draft lotteries of the early nineteen-seventies.

One of Duflo's first studies, written for her dissertation, drew on data from an Indonesian school-expansion program of the nineteen-seventies. The paper provided the first conclusive evidence, for a developing country, that increased education results in higher wages. Upon finishing her Ph.D., she was offered a job in every first-rank American economics department except Stanford's. Even before her graduation, she was invited to speak at a seminar run by Angus Deaton, a prominent development economist at Princeton. "She came into the room sort of looking like a schoolgirl," he recalled. "Very young, very small, looking at her feet. Very broken English. We thought, Oh, God. But then she started talking—a focussed, compelling performance." At one point, she was interrupted by a professor, Deaton recalled, "who said, 'What I

think you really want to do . . . ' And Esther turned to him"—Deaton adopted an Inspector Clouseau accent—"and said, 'That is exactly what I do *not* want to do.' And she was right."

After M.I.T. took her on, breaking a long-standing departmental rule against hiring its own graduate students, Duflo began devising her own experiments. "Before, I wrote in all the introductions of my papers, 'The ideal experiment to measure the effect of this *would* be . . . ' I just got fed up of writing about what the ideal experiment would be. Why don't we just do it?"

"Wallace couldn't come, but I brought some of his fussy prose."



Duflo did not invent the idea of randomized experiments in developing countries. In the nineties, Michael Kremer, a young professor at M.I.T., had set up a small trial in Kenya, which showed that a supply of new official textbooks in rural schools had not improved average student test scores. But Duflo set in motion a randomization industry. "I had this idea of working with lots of different partners, in lots of different places," Duflo said. She thinks of herself as an "institution builder," and she had a taste for extracting data from abundant noise. Kremer, who is a friend and a sometime collaborator, was, as Duflo puts it, "very keen to have complete control over what was happening. He had more of a lab model. I was thinking, I'm going to engage with that layer of complexity, even if it's infuriating." The approach requires field-work patience, behavioral insight, and mathematics. A researcher has to have a good idea, and then make a number of key assessments, including the necessary size of the sample. That figure is determined both by statistical noise and by the experimental disorder that's anticipated to come from attrition (your subjects disappear), contagion (your treatment subjects somehow mingle with your control subjects), and other kinds of slippage (some of your treatment subjects hear dirty jokes in their agitprop, and some do not).

An early Duflo experiment, done in India with Banerjee and others, measured the effect of a program to hire low-cost remedial teachers in primary schools. It turned out to be very effective, and now exists nationally, serving thirty-three million children. Another, in Kenya—a defining experiment that Duflo describes as "very dear to me," and that continues today—sought to understand why small-scale maize farmers were not using fertilizer, despite the likelihood of high returns on a modest investment. Farmers put off buying fertilizer after a harvest, when they had the cash to pay for it, and then, when they next needed fertilizer, they no longer had the money to pay for it. In a series of clever experiments, Duflo and colleagues established that fertilizer made

unquestionable economic sense in these farms, and then showed how even modest inducements—free fertilizer delivery just after harvest, for example—could draw the farmers into new habits, and could defeat procrastination.

At the age of thirty, Duflo was offered tenure at both Princeton and Yale. This gave her leverage not only to secure the same offer at M.I.T. but to persuade the university to commit three hundred thousand dollars for the creation of the Poverty Action Lab. Two years after its inception, the lab was given an endowment by Mohammed Abdul Latif Jameel, an M.I.T. alumnus, in memory of his father, a Saudi businessman. The intention was to build a Web site, to announce a movement—"to turn this from the project that crazy people do in the back yard to something that is institutional and serious," as Duflo put it—and to start giving "executive education" courses in randomization. "Then it became this brand," she said. "It became a thing—in academia and outside organizations. And then it became controversial, which, in a sense, is even better."

One afternoon in northern Hyderabad, in an area of slum housing built on streets too narrow for cars, Duflo watched as a J-PAL surveyor questioned a homeowner, an assured woman in her forties. The room where the interview took place, in the woman's home, was windowless and quite small but held some signs of spending: a television on which a gangster movie was silently playing, a camera, a large fridge, a fan.

As the young surveyor worked through her questionnaire, the economic life of the interviewee came into focus. She had a small business selling saris, and her husband was a carpenter. The couple were building an extra floor on their home, to take tenants; elsewhere, they owned a second house that was already rented out. And they had chosen not to pay their water bill, in either of their homes, for the past four years. The woman explained, with a smile, that she was visited every month by water-utility officials, and she always promised to pay. When the water was cut off, she would bribe an engineer to turn it back on. "I won't let these people coerce me!" she said.

In part to pay for the new construction, the woman had five loans (or seven, if one followed her own astute example, and considered her two water debts as loans). Three of these were microfinance loans—that is, of the type pioneered by Muhammad Yunus, the founder of Grameen Bank, in Bangladesh, and the winner of the Nobel Peace Prize in 2006. Such loans are typically small, and given to women pursuing entrepreneurial projects, and administered by a local group that shares responsibility to see that the debt is repaid.

The woman knew the exact details of each loan, and could report that her combined weekly payment was twenty-five hundred rupees—a little more than fifty dollars. She was clearly comfortable carrying the debt. She made up to three thousand rupees a week from her saris, and in a good week her husband made two thousand. Duflo, who later remarked on the orderliness of the woman's financial thinking, interrupted the survey to ask questions. Why hadn't she saved first, and then built the extra floor? The

woman replied that she had wanted the immediate benefit of the rental income. Why hadn't she tried to get one large loan? She did not have papers for her own house, and so could offer no collateral.

The last page of the questionnaire showed a drawing of a ladder with ten steps. The woman was asked where she saw herself on the ladder, financially. She pointed to the third rung from the bottom, saying, in English, "Middle class."

A few minutes later, we were in the more ramshackle home of a neighbor, in a room largely filled with a bed, and decorated with a poster of three chubby babies and the line "Look for someone to make happy and happiness will find you." A weary-looking grandmother in her late forties, when shown the prosperity ladder, pointed to the second rung from the bottom. Her husband was a day laborer, she said, but had recently injured his leg and had stopped working. The couple now had debts of about three thousand dollars, and no income. In the past, her son had helped them out, but he was now married himself, with two children, and his work was unreliable. This woman had taken out loans from four microfinance companies, and to do so she had lied about her entrepreneurial ambitions. She told one company that she had a vegetable business.

Duflo had long wanted to use experimental methods to put microfinance to the test. As she saw it, there was little beyond anecdote to support claims that the technique had a special power to combat poverty, gender inequality, and ill health. This is not to say that Duflo was committed to debunking. "One of my great assets of being in this business, or maybe I've developed it over time, is I don't have many opinions to start with," she told me. "I have one opinion—one should evaluate things—which is strongly held. I'm never unhappy with the results. I haven't yet seen a result I didn't like."

In 2005, after a lengthy search in an industry wary of subjecting itself to this kind of scrutiny, Duflo and her colleagues found a partner in Spandana, a microfinance provider then expanding in Hyderabad. Spandana, which, unusually, does not require its borrowers to use their loans to support a business, identified a hundred and four neighborhoods in which there was no active promotion of microfinance, and agreed to start operations in fifty-two of them. After more than a year, J-PAL surveyed nearly seven thousand households, measuring consumption, business income, standards of education, and markers of health and women's empowerment.

In the intervening months, many people in the treatment areas had chosen not to take up loans, while some in the control areas had done so; other microfinance companies had moved into these areas. The experiment was therefore built not on a binary model of treatment and control but, rather, on the difference between the two groups in the percentage of borrowers: J-PAL established that a household in the treatment area of Hyderabad was significantly more likely to have taken out a microfinance loan than a control-area household. This winter, three years after people started receiving loans, J-PAL was conducting a follow-up survey. Spandana was no longer withholding its

services in half of the neighborhoods, and competitors were everywhere, as Duflo's visits to the two households had shown; but J-PAL could still make useful measurements between those with older loans and those with newer ones.

"He isn't dead yet."

The questionnaires from the first survey have a privileged place in J-PAL's Hyderabad offices. The data are now on M.I.T. servers, but the original forms are preserved in a room with good light and wide views over the city, while Indian and American staff members are mostly crammed into a hallway outside. Last year, Duflo and three colleagues wrote a preliminary paper based on the data, titled "The Miracle of Microfinance?" They found no miracle. Microcredit allowed some people to start a business, and others to buy durable goods, such as televisions and bicycles. But there had been no rise in average consumption (the best way to get a sense of economic well-being), and no evidence of improvement in levels of education, health, or women's decision-making. As Duflo recently said, "It's a financial instrument that not everybody wants." As a means of getting credit into the hands of the poor, it succeeds, she said, and this is admirable. So the Hyderabad landlady, for example, had probably expanded her property portfolio faster than would have otherwise been possible using such informal credit lines as an unpaid water bill. But Duflo's work has convinced her that the absence of a steady job is what is most likely to be preventing a person in poverty from having an easier life. The second woman had used loans to support her family during a health crisis, and was at least being protected from the interest rates of a moneylender. "But this woman is not an entrepreneur and never will be," Duflo said. Her family needed a reliable income. "They're on the brink of disaster. They lack security, something stable."

When Duflo and her colleagues announced their initial findings, they spoke carefully: if microfinance didn't fix everything, that didn't mean it fixed nothing. Spandana responded in that spirit, and encouraged J-PAL to do the follow-up survey, which would detect any delayed impact. But the wider industry was defensive, which clearly surprised Duflo, who can hardly imagine people who do not welcome solid, hard-won data about their field of interest. One advocacy organization, the Consultative Group to Assist the Poor, responded to the study on its Web site, noting that the poor seemed keen to take up such loans: "Does microfinance improve their lives? Poor people say yes." Duflo described this to me as "the moronic revealed-preference argument." People have been known to buy ill-advised things, after all. Drug dealers thrive.

This spring, a consortium of the leading microfinance organizations published a collective statement, which was, in large part, anecdotal: it told of a woman from Bosnia-Herzegovina who expanded her hairdressing salon, a woman from Peru who built a house. Duflo, out of patience with the industry, told me, "Here is what I think: We tried to help them. They don't want to be helped. Too bad."

Development economists ask many questions that can never be answered by randomized trials. There are two clear restrictions. One is practical. It's hard to cut a country into two—treatment and control—so this is not the way to study central-bank independence, for example, or the virtues of parliamentary democracy. The other, overlapping, restriction is ethical. Randomization causes some part of the population to miss out on the new thing. If an N.G.O. is rolling out a program of free cooking stoves, then a researcher might, with a clear conscience, randomize the order in which people are supplied; but in circumstances of emergency need—after an earthquake, say—such withholding could be scandalous, even if you followed the example of some drug trials, in which the control group does not get a placebo but, rather, gets the best treatment known at the time. Not long ago, an N.G.O. asked Duflo to conduct an experimental evaluation of a program that would feed undernourished children in India with locally sourced food. She declined, for fear of disadvantaging the treatment group, not the control, which would be put on a known regime of packaged food. "I didn't think that it was possible," she recalled. "I may have been wrong."

But Duflo argues, at dozens of talks every year, that trials should be done whenever they can be done properly. In her view, the main players in development—governments in the developing world, as well as the World Bank and the N.G.O.s—have tended to move "from fad to fad." As she told me, "First, it was big dams, then education, then microcredit. And now we're back to dams!" Evaluations of this work, when they have been done, have not been randomized. More rigorous studies, of the kind promoted by J-PAL, are simply "about allocating resources to the best use," she said. "It doesn't seem like a hugely innovative view of the world, but most people who are not economists don't get it. They don't get the idea that there are budget constraints."

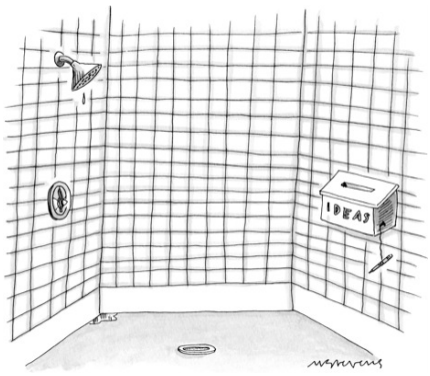
Several years ago, Duflo wrote an article in *Libération*, the French newspaper, in which she advised Western donors to focus more on immunization against measles than on antiretroviral drugs to treat AIDS, which were then very expensive and difficult to administer. Duflo was amazed by the offense people took, although she agrees that it is "emotionally and morally difficult" to weigh one misfortune against another. Rachel Glennerster, J-PAL's executive director, recalled, "When we started, there was a huge amount of resistance and hostility in the development community. We were reducing the complications of poverty to hard numbers! 'You shouldn't be experimenting on people.' O.K., so you have no idea whether they work—*that's* not experimental?"

Duflo sometimes positions J-PAL, conceptually, in contrast to two prominent thinkers on development spending. One is Jeffrey Sachs, who runs the Earth Institute, at Columbia University, and who has argued, in "The End of Poverty" and elsewhere, that a significant, properly targeted increase in Western aid could help eradicate poverty in the developing world. The other is William Easterly, a former World Bank economist now teaching at N.Y.U., and the author of "The White Man's Burden." Easterly is opposed to such "big push" thinking, and believes that poverty is more likely to be eradicated by the local action of democracy and markets. "The right plan is to have no plan," he has written.

Duflo could be thought of as a natural ally of Sachs—she supports increased aid budgets—but her vigilance about numbers has led her to question some aspects of his approach. Last fall, nearly three years after the start of the Earth Institute's Millennium Villages Project, a pilot scheme of targeted spending in thirteen areas in sub-Saharan Africa, Sachs asked J-PAL for advice about evaluating the program's efficacy. In an e-mail to Sachs, Duflo suggested that it was too late to use J-PAL methods to measure the existing program, adding that the methods could be used in any later expansion. Sachs did not reply. In a *Times* article about the Millennium Villages, published some months later, he was described as disliking evaluations that withhold treatments, and was quoted as saying, "It pains me to be in a village that doesn't have bed nets." Duflo, who is so decorous that she uses asterisks to soften the word "crap" in an instant-message exchange, reacted to that quote with unusual heat. "He adopts this completely anti-scientific attitude," she told me. "He cannot collect data because it 'pains' him? . . . I am not really asking for a crazy standard of proof, just *comparing*." Sachs, responding via e-mail, wrote me that "careful measurement and comparisons are, of course, vital," and added, "All I was saying is that if I go into a village without bed nets, it pains me. (I've seen a lot of children dying of malaria over the years. It's enough to pain one.)"

In Duflo's view, both sides of the Sachs-Easterly argument reflect an unrealistic public desire "for an expert discourse, which is going to be able to tell you: This is going to be the end of poverty." Duflo, borrowing an old phrase of the French left, argues that "there is not going to be *le grand soir*—one day, the big revolution, and the whole world is suddenly not corrupt. But maybe you create a small little virtuous group here and something else there. All these things are incremental." According to Duflo, the virtue of randomization is that it not only identifies the best remedies; it does so with a clarity that should be attractive to policymakers, who surely want to be associated with ideas that work. That's a key Duflo assumption, and an optimistic one, and it has not been fully evaluated in a randomized setting. After all, a politician may prefer to be associated with hoopla, or with cash in plain envelopes. And a bad policy with formidable political support could well have a greater impact than a good policy with less support. Duflo is not naïve about such things, but J-PAL's overarching experiment, perhaps, is a study of whether it can make its own agenda irresistible to decision-makers. As Duflo describes it, Phase II of J-PAL, now just beginning, is the effort to engage decision-makers not just as experimental partners but as adopters of programs that have already been vetted.

Meanwhile, Duflo's tone of certainty about the joys of randomization—she boldly told the TED conference that she could "take the guesswork out of policy-making"—maddens some scholars who have greater tolerance for looser, longer-established ways of trying to effect change. Lant Pritchett, a development economist at Harvard, and a former World Bank researcher, noted that randomization has played no part in civil rights, feminism, or any of the other great social changes of his lifetime. With weary amusement, he compared Duflo to a French revolutionary—"He who is not with us is against us!" (Still, he described Duflo as one of the five smartest economists in the world.)



At its core, J-PAL exists to do evaluations and encourage others to do them. But the forty-four scholars at M.I.T. and elsewhere who are attached to the lab have papers to write and careers to make, and so its projects must address questions that engage other economists. Duflo makes that sound easy: "Economics is about behavior, rational and less rational. And about how behavior responds to the environment, and how we can shape the environment to get people to act differently, and whether it's good for them. Very quickly, when you start evaluating programs, you get into these kinds of issues." Rachel Glennerster adds, "You're not just learning about what this particular program does in this particular place but understanding human behavior better. For example: Why do people not do the things that are good for them? Why do people not invest in preventative health? That's an incredibly important conundrum for saving the world."

Not everyone is persuaded. Among the critics of J-PAL's work, the best known is Angus Deaton, the Princeton economist. Despite his admiration for Duflo, Deaton has become increasingly wary of the fashion for randomization—to the point where, at the end of 2008, he found himself giving a high-profile lecture in London that began with two photographs on a PowerPoint slide. One showed someone floating beneath an open parachute; in the other, a person appeared to be jumping out of a plane without a parachute. The first photo was marked "Esther Duflo," the second "Abhijit Banerjee." The point was this: Do we need to test the idea that parachutes are useful to people who jump out of planes? Deaton's tone came as a surprise to some. Joshua Angrist, Duflo's former adviser, recently wondered if "someone put sand in Angus's toothpaste."

Deaton's lecture, and a subsequent paper, made two main arguments. One: Randomized trials are more difficult than they look, and "experiments are frequently subject to practical problems that undermine any claims to statistical or epistemic superiority." Two: Even if your data are perfect, how can you generalize from the information? Does the policy that works in India work in Brazil? Does the approach that works for a hundred people work when applied to ten million people? This is the problem of "external validity." As soon as you leave behind the particular context of the experiment, then any wider economic point you might like to make derives from inference, which is only as good as the thinking—the theory—behind it.

Deaton told me that he saw his comments as more in the form of an amicus brief than an attack, and he has stayed on good terms with Duflo and Banerjee. "I really like him personally, and think he's brilliant," Duflo said. But her defense was vigorous: "We're not just evaluating a program and attaching some larger thoughts at the end, but finding ways to use evaluation to *explore theories*," she told me. "The backbone of theory, which he says should be there, it *is* there. Who is he attacking?" She thought that she detected in Deaton a kind of élitism: "He's saying that if you're smart you're going to do good work anyway, and if you're not smart it'll be bad work anyway. And that we are being misleading, and potentially dangerous, in claiming that this tool will allow you to do good work. Of course, people can make mistakes, but I disagree with his view of the world. I think, if you give people a better tool, they do better work." She added that she could imagine the tool becoming more widely used in nonacademic, non-theoretical environments. She recalled, "I once sat through a presentation where randomized trials had been used to choose the best packaging for yogurt."

After the eleven days in India, Duflo flew to Rwanda. One night in Kigali, she was in a bar on the top floor of the MTN Center, an airy modern mall. A soccer match between Manchester United and Manchester City was on the television, and during moments of high excitement people leaped from their seats to shout. Duflo looked skeptical as she drank her beer. She was feeling reflective, and a little tired. After her time in India, she said, "I don't even want to see a *painting* of a government official." (In French, you become so tired of something that you can't stand to see its image.) She would soon be flying from Rwanda to Belgium, to receive an honorary doctorate, before heading back to Boston.

Duflo had started the day at a meeting in the Kigali offices of TechnoServe, an American N.G.O. that promotes itself with the slogan "Social Change Has a Business Plan." It was a place of chinos and strong handshakes. The *Harvard Business Review* was available in the lobby, and someone was eating a bagel. (This all reinforced a striking surface contrast between Indian commotion and Rwandan orderliness.) After the meeting, Duflo was driven to a rural hillside, where she spoke with coffee farmers. A TechnoServe project running across East Africa works to organize farmers into collectives, and helps some of these groups to obtain a coffee mill that raises the quality of the beans they bring to market. J-PAL was not studying the mills themselves—there are too few to randomize—but it was examining the agronomic

training that TechnoServe offered its clients. (Instruction in mulching, for example.) Do such efforts increase crop yield? Do they help the friends of those who are trained? Duflo talked to TechnoServe officials about linear networks and star networks. For a moment, she was distracted by a goat. "I want a baby goat," she mused. "I'll take good care of it."

Returning to Kigali, Duflo was dropped at the MTN Center. After a brief conversation with a charming, upbeat café manager about the essential qualities of a *croque monsieur,* she contemplated the new information of the day: the puzzling price structure of good and less-good coffee; the risk that a collective might mutate into an abusive closed shop; the way farmers used delayed payment from collectives as deliberate savings schemes. Future experiments had suggested themselves.

"It can't only be the data," Duflo said, showing a rare willingness to generalize. "Even to understand what data means, and what data I need, I need to form an intuition about things. And that process is as ad hoc and impressionistic as anybody's."

It can't only be the data, but there must *be* data. "There is a lot of noise in the world," Duflo said. "And there is a lot of idiosyncrasy. But there are also regularities and phenomena. And what the data is going to be able to do—if there's enough of it—is uncover, in the mess and the noise of the world, some lines of music that actually have harmony. It's there, somewhere." ♦

Ian Parker contributed his first piece to *The New Yorker* in 1994 and became a staff writer in 2000.