"OUT OF POVERTY teaches us to think simple. Paul Polak brings forward ideas and solutions that bypass government agencies and other leaden institutions. Ideas that work!" —PAUL NEWMAN

PAUL POLAK

OUT OF POVERTY

WHAT WORKS WHEN TRADITIONAL APPROACHES FAIL

an excerpt from

Out of Poverty:
What Works When Traditional Approaches Fail

by Paul Polak

Published by Berrett-Koehler Publishers

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PREFACE

My fifteen-month-old grandson, Ethan, has fallen in love with a neighbor's driveway. It sits two houses down from where he lives in Sebastopol, California, and it seems to overflow with small, multicolored stones. He stops there when I take him for a walk, and then he refuses to leave. He picks up a handful of stones and inspects each one carefully. He places them one after another in my hand, watching intently, and I give them back to him one by one until his hand is full again. I don't know who has given him the job of turning every little stone over and over in his hand until he understands its very essence, but that's the job he has accepted, and he's not leaving until it's done. He plops down on his butt and cuffs the stones into a pile, looks at me, and knocks it down and giggles. He can keep this up for hours, and if I pick him up to take him home, he cries. His playful curiosity is infectious, and I think I must have inherited a lot of genes from Ethan, because I operate just as he does. I live to play and to satisfy my curiosity.

For the past twenty-five years, two questions have kept my curiosity aroused: What makes poor people poor? And what can they do about their poverty?

Because of these infernal questions, I've dozed off during hundreds of long jeep rides with good companions over dusty, potholed roads. I've had thousands of conversations with one-acre farmers with dirt on their hands. We've walked along their patches of ten-foot-high black pepper vines in the central hills of Vietnam beside jungle permanently scarred by Agent Orange. We've strolled together through their scattered quarter-acre plots in the drab brown winter plains of the Gangetic delta in Uttar Pradesh, and they have offered me more cups of steaming tea than my seventy-three-year-old kidneys can take. I love discovering new things from people nobody else ever seems to listen to, and I love talking them into trying out some of the crazy ideas that we come up with together. I have learned more from talking with these poor farmers than from any other thing I have done in my life.

This book will tell their story and describe some of the things these people have taught me. It will tell the story of Krishna Bahadur Thapa and his family, and of how they moved from barely surviving on less than a dollar a day to earning forty-eight hundred dollars a year from their two-acre farm in the hills of Nepal. I tell many stories like Bahadur's in this book, and I hope that each one of them satisfies another small bit of your curiosity about how people who are extremely poor live their lives and dream their dreams. Best of all, what I learned from these people has been put to work in straightforward strategies that millions of other poor people have used to end their poverty forever.

Each of the practical solutions to poverty I describe is obvious and direct. For example, since 800 million of the people whose families survive on less than a dollar a day earn their living from small farms, why not start by looking for ways they can make more money from farming? And since these farmers work for less than a dollar a day, why not look for ways they can take advantage of their remarkably low labor rates by growing high-value, labor-intensive cash crops and selling them at the time of year when these crops will fetch the highest prices? If it is true that common sense is not really common, and that seeing and doing the obvious are even less so, then some of the conclusions I draw from my conversations with poor people will surprise you: they certainly fly in the face of conventional theory and practice in the development field.

I hate books about poverty that make you feel guilty, as well as dry, academic ones that put you to sleep. Working to alleviate poverty is a lively, exciting field capable of generating new hope and inspiration, not feelings of gloom and doom. Learning the truth about poverty generates disruptive innovations capable of enriching the lives of rich people even more than those of poor people.

The first section of the book explains how I became curious about poverty, describes the process I learned for finding creative solutions to just about any major social problem, and challenges the three great poverty eradication myths that have inhibited doing the obvious to end poverty.

The next section, Chapters 3 to 8, describes what many small-acreage farmers have taught me, a practical approach capable of ending the poverty of some 800 million of the world's dollar-a-day people. For

poor people themselves, there is little doubt that the single most important step they can take to move out of poverty is to learn how to make more money. The way to do it is through grassroots enterprises—just about all of the poor are already tough, stubborn, survival entrepreneurs—and they have to find ways to make their enterprises more profitable. For small-farm enterprises, the path to new wealth lies in growing market-centered, high-value, labor-intensive cash crops. To accomplish this, poor farmers need access to affordable irrigation, a new generation of farming methods and inputs customized to fit tiny farms, the creation of vibrant new markets that bring them the seeds and fertilizers they need, and open access to markets where small-acreage farmers can sell their products at a profit. This range of new products and services for poor customers can only be created by a revolution in current design practice, based on the ruthless pursuit of affordability. Chapter 9 describes how the principles discussed in the earlier chapters can be applied to helping poor people living in urban slums and on the sidewalks of cities in developing countries.

In the wrap-up section, Chapter 10 describes the central role poverty plays in most of the problems facing planet Earth; Chapter 11 describes what donors, governments, universities, research institutions, and the rest of us can do to end poverty; and Chapter 12 tells how Bahadur and his family finally moved out of poverty.

My hope is that you will come away from reading this book energized and inspired. There is much to be done.

Learning to Do the Simple and Obvious

I WAS TWELVE YEARS OLD WHEN I LEARNED I COULD MAKE FIVE cents a quart picking strawberries. So when strawberry-picking season rolled around in mid-June 1945, my friends and I got pretty good at it. Before the season was over, I picked two hundred quarts in one day and came home with ten dollars in my pocket. This got me to thinking.

"If I can make ten bucks a day picking strawberries," I said, "just imagine what the owner of the field is making." I decided then and there to go into the strawberry business.

So at the age of fifteen, I convinced two local farmers to be my partners. Morley Leatherdale had a job in town and raised trotting horses in his spare time. He had a nice, rolling, loamy three acres behind his house that he was willing to contribute to the strawberry business. Ed Cummins had inherited one-hundred-and-sixty acres of fine farmland from his father, along with a large Victorian red brick house that looked like a castle to me. He contributed a beautiful four-acre piece of sandy, fertile soil at the back of his farm.

The first step was putting a thick layer of manure on both fields. Ed had a barn with twenty milk cows; his cup of manure was running over. One spring morning, Ed and I hitched his team of horses to the manure spreader and started throwing manure into it with pitchforks. Ed spit on his hands and pitched forkful after forkful at a slow but steady pace. He was close to sixty and I was in very good shape, so I knew this would be a good opportunity to show him up.

"This will be a breeze," I thought, as I pitched manure at a torrid pace. I outstripped Ed easily for half an hour, but in the second half hour he seemed to be catching up. By the end of two hours, the spreader full, Ed had me beat by a mile. Worse still, he had hardly broken a sweat while I was sweating like a pig, ready to lie down and die.

When the loader was full, we ran it out to the field. Ed pulled on a long, rusty, red gear handle that activated the chain-and-ratchet mechanism connected to the rear axle, gradually feeding the manure into a rapidly rotating horizontal column of spikes at the back. Steam rose from the horses' backs in the early morning sun, and clods of cow manure flew wildly over the field. We covered the wheat-stubble surface of that field with more loads than I can remember. By the end of the day, I was exhausted. The next morning we did it all over again. Ed then plowed the wheat stubble and manure under, and leveled the field with a harrow so it was ready for the planter.

Somebody loaned us a double-row horse-drawn planter—I don't think you can find one anywhere now except in a museum. It had a tiny plow in front which opened up a six-inch-deep furrow, and two spring-based round metal seats at the back where Morley and I perched our bums precariously close to the earth as the contraption dragged along. With my right hand, I picked up a seedling from the flat in front of me and backhanded it down into the furrow. As if my mirror image, Morley did the same from the right seat. We alternated all day like two players in a never-ending, slow tennis match. As soon as we placed a plant in the furrow, the planter gave it a squirt of water from an overhead tank, then two rollers trailing along behind closed the furrow. It took us a day and a half to plant seven-and-a-half acres.

My biggest challenge after planting was to get rid of all the ragweed, pigweed, and clumps of grass that appeared out of nowhere to compete with my strawberry plants. My main accomplice in this genocidal

attack on all weeds was an old horse named Dick, who had a bad gas problem and who pulled a six-tined cultivator. I grew to love the pungent smell of horse sweat mixed with the heated leather of Dick's harness. The trick for me was to weave the cultivator in and out between the plants without uprooting them. This cut down on the hoeing time.

Cultivating turned out to be a much easier job than hoeing. I could cover a lot of ground with a fast slicing motion that just missed the strawberry plants. But hoeing a four-acre strawberry field took several days, and by the time I reached the end of the last row, it was time to start again. I learned then what legions of farmers have always known: the everyday work of farming is excruciatingly boring.

At the end of that first year, the strawberry fields looked good. But unlike previous years when I had cash in my pocket from picking, I was seriously in the hole. Maybe being an owner didn't bring as much of a bonanza as I thought it would.

When harvesttime came in June of the following year, I borrowed my father's two-ton truck and showed up at Dundurn Castle in Hamilton at quarter to six each morning to pick up a motley crew of stout Ukrainian women ready to pick strawberries. I paid them five cents a quart. I was in business.

But first I had to find a place to sell my crop.

The biggest grocery store chain in Hamilton then was Loblaws, which is still Canada's biggest supermarket chain and food distributor. I went to the back entrance of the biggest Loblaws store in town, and asked to talk to the produce manager. I told him I had seven-and-a-half acres of fresh strawberries to sell.

"How much?" he asked. We struck a deal on the spot for twenty-five cents a quart. From that day on I was the main strawberry supplier for Loblaws, and provided strawberries for about half the one hundred ninety-five thousand people who lived in Hamilton.

By the second week of July, it was time to figure out if I had made a profit on my strawberry venture. After all the expenses and the loans to my father were paid, there was fourteen hundred dollars left on the table to split with my partners. I had earned seven hundred dollars for two summers' work, equivalent to about seven thousand in today's dollars. This was not a fortune, but at the time, it seemed a lot to me.

Is this a Horatio Alger story? Was it the first step in establishing a

prosperous strawberry empire? Was I destined to become the strawberry king of Ontario and live happily ever after? I'm afraid not. After all, I was only sixteen, and I began to be more interested in girls, ballroom dancing, and playing third base on the Millgrove softball team. So I took the money and ran.

But now, fifty-seven years later, I realize that my two years in the strawberry business gave me a deep appreciation of what it takes to run a small farm and make money doing it. This is at the very heart of my quest to find practical solutions to rural poverty over the past twenty-five years. The challenges, opportunities, and hard work I experienced in the strawberry business mirror the challenges one-acre farmers face every day as they try to make a living from their scattered quarter-acre plots.

And, of course, I realize now that I was practicing organic farming before it had a name.

I did just about all the work myself on those seven-and-a-half acres of strawberries, but I had access to horse-drawn plows, cultivators, and manure spreaders—a big advantage over most of the poor small-plot farmers in Africa now who, with no access to animal power, must plow, cultivate, and hoe by hand. Most of the world's poor small-acreage farmers remain far behind the animal-drawn level of mechanization I used on a small farm in Canada almost sixty years ago.

I learned a few other important things.

Although it was pretty hard for me to admit then, I learned that I couldn't go far in life without asking for help and getting it.

I learned that you can make a lot of money from a very small farm if you learn how to grow valuable crops, if you can find a market where you can sell them at a profit, if you have a good source for affordable plants and fertilizer, and if your crops don't get wiped out by diseases and pests.

I learned that learning new things every day brought me more pleasure and happiness than anything else I could do with my life.

I learned that the sun, wind, rain, and black root rot were pretty much beyond my control. I began to learn that giving up illusions of control might allow me to make a difference in the world far greater than that of which any King of Strawberries can dream.

It took thirty years for me to get involved in farming again. In the meantime I went to medical school, got married, became a psychiatrist, and ran businesses in real estate and in oil and gas. It was in 1981 that I became intrigued again with farming. This time, however, it was radically miniaturized hand-tool versions of farming, compared with the seven-acre strawberry farm I had reigned over. Now I began to learn everything I could about the one-acre farms where 800 million very poor people in the world had learned to survive on less than a dollar a day. That was the start of my quest to find ways they could earn much more from their tiny farms.

Many people ask me to explain why I stopped being a psychiatrist and changed over to working on poverty. But I don't really see it as a change. Because poverty plays such a critical role in the incidence and prevalence of all forms of illness, I have always believed that learning about poverty and what can be done to end it should be a basic science in every medical school and psychiatric-training curriculum. Thirty years ago, I became convinced that the most significant positive impact I could have on world health was to work on finding ways to end poverty.

I wish I could say that my work on poverty over the past twenty-five years has followed a carefully thought-out plan, but it was much more a process of jumping on opportunities that appeared unexpectedly and then learning from each experience. Of course, people make their own opportunities, and there was a strong element of that too. In my work as a psychiatrist, I discovered early on that I could learn more about the seriously mentally ill patients I was trying to help if I talked to them in their homes or their places of work, and if I listened to what they had to say.

One of the people I learned most from was Joe, who was both mentally ill and poor. When I became intrigued with the problem of homelessness, Maryanne Gleason, a friend who ran the Stout Street Clinic, which provided medical treatment for homeless people in Denver, introduced me to Joe, who had lived on the street for more than ten years, and he and I spent a day together. By the end of the day, I was stunned by how much I had learned. But it wouldn't have happened except that I approached learning about homelessness through three contrarian steps.

First, instead of interviewing Joe in my office, I talked to him in the three-foot-high space where he lived under a loading dock by the railroad tracks.

Second, I focused on learning about homelessness through Joe's eyes, instead of assuming I knew a lot about the subject already because I was a psychiatrist.

Third, I asked Joe to take me to the places where he lived his life, and I asked him every detail I could think of about each of them. We went together to the liquor store where he bought his beer and rotgut brandy, the railroad station where he stored his stuff in a locker, the outdoor roof under which he and his friends cooked their meals in a discarded charcoal grill, and to his home under a loading dock where he read books while tucked into his donated forty-below-zero sleeping bag before he turned off his lantern and went to sleep.

Maryanne set me up to meet Joe at a soup kitchen, where I was surprised to learn that he was one of their most reliable volunteers. I was dressed in ski clothes because it was a snowy day in December, and as soon as he saw me, Joe piled a white bread baloney sandwich and a bowl of soup on a depressing, industrial brown plastic tray and handed it to me. I was embarrassed. I said I had already had lunch, explained who I was, and asked if I could spend the afternoon with him.

"Sure, doc," he said, "if you don't mind waiting till I'm done with my shift."

So I read a book for half an hour till he was ready to go.

"I see you got a video camera, doc," he said. "Feel free to use it."

Our first stop was the railroad station.

"The first thing you need when you're homeless is a safe place to store your stuff," said Joe. "The train station lockers cost 75 cents for twenty-four hours, and that's a hell of a lot better than the bus station rip-off. There, they say it costs 75 cents; but if you come back an hour later, the meter says $2.50, and you can argue till you're blue in the face, and you still have to pay $2.50 to get your stuff back."

He dropped three quarters in the slot and pulled a bedroll and three bulging supermarket plastic bags out of his locker. I shot some footage of him pulling a can of pipe tobacco, spare socks, clean underwear, and a pint bottle of peppermint schnapps from one of his bags

to show me. His bedroll was a heavy wool blanket tightly cinched with two leather belts around a good-quality, forty-below-zero sleeping bag.

It was snowing slightly as we trudged along the railroad tracks north of Union Station. Joe walked a little hunched over, with his feet slapping down into the snow one after the other. At the age of forty-five, with a full, trimmed black beard framed by a tightly fitting blue wool cap and wearing a padded red ski jacket drooping over a pair of clean but faded blue jeans tucked into leather hiking boots, he looked more like a rugged urban pioneer than a street bum. The third plastic shopping bag he was carrying contained a thermos of hot soup for his friend Chris, who had frostbitten toes and lived in a loading dock a quarter mile from Joe's. So we delivered Chris's soup and then we were off to Joe's home.

The entry to Joe's home under the loading dock was completely sealed off by three sheets of heavy black plastic, weighted down at the top by two big blocks of wood and at the bottom by three heavy rocks. Joe lived in an eight-by-ten-foot space a little over three feet high—I found that inside I could move like a crab if I stayed on my feet. But it was much easier moving around on my hands and knees. The floor was covered by a discarded carpet given to Joe by his rail yard worker friends, and a robust battery-powered lantern was suspended from a steel screw in the red brick wall at the back of the loading dock. Joe said he hung around with his friends in the afternoons, and after supper he climbed into his sleeping bag and read a book until he felt like going to sleep.

We went to the White Spot Café to talk. We drank a couple of cups of coffee while I ran the video camera. Joe left home when he was fourteen and started living on the streets. He joined the marines when he was seventeen, but went off the deep end and did the rounds of psych wards in VA hospitals for seven months, received a medical discharge, and hit the streets again. Five years ago he had ridden the rails to Denver, and that's where he had lived till now. From time to time, he became depressed, and when that happened, he went on medication provided by Stout Street Clinic.

"I don't like homeless shelters," he told me. "I've been to Jesus-Saves only three times in the last five years, and that was during my first month

in Denver. It's not right. You have to listen to two hours of ear-banging by a preacher just to get one lousy free meal. I'd rather sleep out."

Joe lived on an income of about five hundred dollars a month. Sometimes he collected aluminum beer cans that he cashed in at the recycling center. He and a lot of his friends sold plasma at the blood bank. You were only supposed to do it once a month, but Joe often did it two or three times a week. He collected an occasional VA disability check, but more often than not, he didn't get it because he didn't have a legitimate address where it could be sent.

He could get a room in a fleabag hotel for two hundred dollars a month, but preferred to have some money for drinks and fun and sleep out. In his shoes, I think I would have done the same.

By the time Joe and I parted company, my head was spinning with ideas. Three thousand homeless people in Denver each spending $500 a month represented buying power of $1.5 million a month, a perfect opportunity to start grassroots businesses to serve the needs of the homeless. For example, why wouldn't homeless people be enthusiastic customers for a secure storage-locker enterprise owned and managed by other homeless people? Since many of the homeless smoked, why couldn't one or two of them get some tobacco, cigarette papers, and a cigarette-rolling machine, and start selling cigarettes? If so many of the homeless got medications paid for by the state at Stout Street Clinic, why wouldn't it be possible to set up a patient-owned pharmacy? (Dick Warner and I organized one in Boulder a year later, and it's now making a profit of $100,000 a year.)

What my afternoon with Joe confirmed for me is that coming up with practical solutions for homelessness requires going to the places where homeless people live, learning from them what their lives are like, why they do what they do, and what opportunities they take advantage of now and hope to take advantage of in the future. I was able to put what I had learned from my day with Joe to good use in learning about poverty by interviewing people all over the world who survive on less than a dollar a day, by walking with them through their one-acre farms and enjoying a cup of tea with their families, sitting on a stool in front of their thatched-roof mud-and-wattle homes.

These people told me they were poor because they couldn't earn enough from their one-acre farms. They said they needed access to

affordable irrigation before they could grow the high-value crops that would increase their income, and sometimes they needed help to get these crops to markets where they could sell them at a profit. So in 1981 I started an organization called International Development Enterprises (IDE) that helped them meet these needs. We designed a range of affordable irrigation tools such as treadle pumps, and mass-marketed them to small-acreage farmers through the local private sector. We helped farmers pick four or five high-value fruits and vegetables they could grow well in their area, set up private-sector supply chains that sold them the seeds and fertilizer they needed to grow these crops, and helped them sell what they grew at a profit in the marketplace. This effectively ended the poverty of 17 million dollar-a-day rural people.

It has taken me twenty-five years to come to these ridiculously simple and obvious conclusions.

I've finally come to realize that seeing and doing the obvious is probably one of the most difficult things to do. I think that one of the influences that helped me to see and do the obvious—even if it took me twenty-five years to do it—is that my father was a survivor and one thing it takes to be a survivor is the capacity to see the world around you with open eyes.

By the time Neville Chamberlain gave the Sudetenland to Hitler as a gift, my father's plans to escape to Canada were almost complete. He told me later that the need to leave everything behind and escape was obvious. He said that since refugees, many with broken heads, had been streaming across the border with Germany for years, the disaster about to fall on us was predictable. He pleaded with his friends and relatives to escape before it was too late.

"But what would we do with the furniture?" they replied.

Most of them stayed in Czechoslovakia and died.

All too many times in my life I have encountered people who make disastrous mistakes because they keep their eyes closed to what is happening around them. Each time, I remember what my father's friends and relatives said when he pleaded with them to escape.

"But what would we do with the furniture?"

I think the furniture of our professional training—of the middle-class contexts in which most people from Europe, North America, and

prosperous Asia are raised—contributes to our inability to see and do the obvious about poverty.

It may seem ridiculous to you for me to repeat each of the key things that I learned from talking to poor rural people—each of these points is so simple and obvious. But they're important enough that I'm going to do it anyway.

1. The biggest reason most poor people are poor is because they don't have enough money.
2. Most of the extremely poor people in the world earn their living now from one-acre farms.
3. They can earn much more money by finding ways to grow and sell high-value labor-intensive crops such as off-season fruits and vegetables.
4. To do that, they need access to very cheap small-farm irrigation, good seeds and fertilizer, and markets where they can sell their crops at a profit.

Any one of you can learn all of the above by spending one day in a poor village in any developing country and asking ten or twenty farmers why they are poor and what they can do about it. The remarkable thing is that poverty eradication programs continue to spend billions of dollars in poor countries, without much to show for it and without taking most of these points into account.

This book will describe in detail each of the steps needed to address these points, as well as the revolution in thinking and practice that is needed to end poverty, by telling the stories of the poor people I have met over the past twenty-five years.

CHAPTER ONE

Twelve Steps to Practical Problem Solving

ONE OF THE THINGS THAT ALWAYS PIQUED MY CURIOSITY ABOUT poverty is that most people see it as more permanent than the Rock of Gibraltar. But I know that people are capable of moving out of poverty in a few months, because there are simple and obvious solutions to it. The central theme of this book is that you can come up with obvious practical solutions to just about any complicated social problem by following a few simple basic steps. Here are the twelve steps I used to arrive at the solutions to extreme poverty I describe in this book. Although each of them is simple and obvious, many people find them difficult to apply. For example, most poverty experts spend little or no time talking with and listening to extremely poor people in the places where they live and work, although that is exactly where I have been guided to most of the practical solutions to poverty that I describe in this book.

1. Go to where the action is.
2. Talk to the people who have the problem and listen to what they say.

3. Learn everything you can about the problem's specific context.
4. Think big and act big.
5. Think like a child.
6. See and do the obvious.
7. If somebody has already invented it, you don't need to do so again.
8. Make sure your approach has positive measurable impacts that can be brought to scale. Make sure it can reach at least a million people and make their lives measurably better.
9. Design to specific cost and price targets.
10. Follow practical three-year plans.
11. Continue to learn from your customers.
12. Stay positive: don't be distracted by what other people think.

1. GO TO WHERE THE ACTION IS

You can't sit in your office at the World Bank or in your research lab at Stanford and figure out what to do about poverty in Myanmar.

Hurricane Katrina struck New Orleans at 6:10 a.m. on August 29, 2005. Here's what Michael Brown, director of the Federal Emergency Management Agency (FEMA) said when Paula Zahn, a CNN interviewer, asked him four days later about the desperate conditions where crowds of people had sought refuge at the Ernest N. Morial Convention Center.

Michael Brown: "We just learned about that today."

Paula Zahn: "Sir, you're not telling me… that you just learned that the folks at the convention center didn't have food and water until today, are you?"

Brown: "Paula, the federal government did not even know about the convention center people until today."[1]

What kept Michael Brown from going to the convention center to see for himself? The practical solutions for the rapidly deteriorating conditions experienced by so many Katrina survivors who had taken shelter there would have been immediately obvious.

Michael Brown resigned under pressure a few weeks later.

In 1981, when I was working on a project to build and sell five hundred donkey carts to refugees in Somalia, I met a pleasant middle-aged man who managed five health clinics in refugee camps for a major international relief organization.

"How often do you get out to the refugee camps to visit your clinics?" I asked.

"I haven't been there yet and I don't plan to go soon," he said with considerable pride. "If you go to the field, it's mass confusion. Managers have to be able to think clearly, without distractions, to make good decisions, and you simply can't do it in the middle of the noise and chaos of field conditions."

I was so astonished that for once in my life I was speechless.

Two months ago, I had lunch with a man who managed a large US-based demonstration farm for an organization that makes livestock available to poor rural families in developing countries. He was responsible for public education and fund-raising with the thousands of people who visited the farm each year. During the seven years he had managed this important demonstration farm, he had never visited any of his organization's programs in developing countries.

I simply can't imagine how anybody can make realistic plans to eradicate poverty or to address any important problem without visiting the places where the problem is occurring and talking with the people who have the problem.

2. Talk to the people who have the problem, and listen to what they have to say

In the 1990s, agriculture experts in Bangladesh were dismayed that small-acreage farmers were applying only a tiny fraction of the fertilizer that their monsoon-season rice crops needed, even though they could triple their investment in fertilizer from the increased rice yields the recommended amount would stimulate. The experts complained about the irrational and superstitious behavior of small-acreage farmers, and set up extension programs and farmer-training programs, but nothing worked. The farmers continued to apply a tiny fraction of the

fertilizer that their rice needed to thrive. Finally, somebody asked some farmers why they were using so little fertilizer.

"Oh, that's easy," they said. "Every ten years or so around here, there is a major flood during the monsoon season that carries away all the fertilizer we apply. So we only apply the amount of fertilizer we can afford to lose in a ten-year flood."

Suddenly it became clear that the farmers were excellent, rational decision makers and that it was the agriculture experts who had a lot to learn. In order to survive, subsistence farmers have to be at the cutting edge of avoiding risk. With very good reason, they care much more about avoiding losing their farm than they do about tripling their income. When they have the opportunity (and the money) to invest in fertilizer during the dry season when the risk of floods is close to zero, they are glad to do so.

There is another problem with this action step. Far too many people can talk to the people who have the problem and not learn anything, because those who would help don't always know how to listen. As a young psychiatrist in 1962, I got interested in finding out if the patients admitted to the psychiatric wards of Colorado Mental Health Institute at Fort Logan and the psychiatrists, social workers, and nurses treating them were working on the same treatment goals. To my amazement, the mental health professionals not only had different treatment goals from their patients, but they also were unable to predict which goals the patients saw as most important. When I asked more questions, I learned that mental health professionals were trained to define the problem bringing a patient to a psychiatric hospital as a mental illness inside the head of the patient, while patients saw the problem as residing in the group of people with whom they lived and worked outside the hospital. Often the patient's symptoms of mental illness would get better when he or she was given medication and removed from the upheavals going on in his or her real-life setting, only to be readmitted to hospital after being released again into the unchanged social setting that had precipitated the symptoms in the first place. When mental health professionals learned to listen for and intervene in the problems in the real-life setting at the same time they diagnosed the symptoms of mental illness, treatment outcome improved dramatically. The same

kind of thing happens with people trying to address the problems of poverty. If these professionals are trained to assume that modern farming depends on Western mechanization, in the end they are likely to leave behind rusting hulks of big tractors and harvesters as monuments to the inability to listen and learn.

3. Learn everything you can about the problem's specific context

We achieved a great deal of success with treadle pumps in Bangladesh. Now I quickly run out of fingers and toes when I try to count how many people have asked me if they could use treadle pumps to help farmers in villages in other countries.

"How deep is the water table in your village?" I ask, because a treadle pump is a suction pump that simply won't lift water more than about twenty-seven feet.

"I don't know" is the most common answer.

"Tie a rock on the end of a piece of string, go to the nearest well, and measure how deep the water table is," I say. "Or go to the government ministry of water resources—they likely have maps with that kind of information."

"OK, we'll do it the next time we visit," they say.

The fact is, you can't make practical plans unless you gather a lot of details about each specific village context. What kind of high-value crops you can grow in each depends on the type of soil and the climate. The price of fruits and vegetables is usually highest at the time of year when it's most difficult to grow them, so it's important to know why these crops are difficult to grow at that time of year and what can be done to overcome the difficulty. If there is a factory nearby with jobs that pay well, the labor required for intensive horticulture may be hard to come by.

Everything I have to say in this book depends almost totally on having interviewed three thousand poor farm families, listened carefully to what they had to say, and learned everything I could about the specific context in which they lived and worked.

4. THINK BIG AND ACT BIG

If you learn about a problem in its real-life context from the people who have the problem, ask basic questions, and open your eyes to see the obvious, you are likely to come up with big ideas with world-changing potential. This is not only exhilarating, it can be frightening—and some people react to this excitement by making puny action plans. Other people fail to think and act big because they have never done so and aren't used to it, or because they don't want to be seen as arrogant, or because they are afraid of failing if they think too big. I have learned to look at the total global market potential of any idea from the beginning, even if doing so makes me uncomfortable. I've gotten used to the grandiosity labels that come with thinking big.

In the chapter on creating new markets, I will consider the fact that there are a billion people in the world who need eyeglasses but don't have them, and I will discuss the potential solution of providing access to display stands from which people could pick two-dollar spectacles that correct their vision problems. When most people think of implementing a solution like this, they think small. There are several organizations that have started to provide affordable reading glasses to poor people, but all of them together have delivered less than a half million eyeglasses, which serves less than one-tenth of 1 percent of the customers who need them. I start by thinking about how to reach half of the total potential market of 1 billion or so within fifteen years. A business plan to accomplish this would probably need to reach global sales of 50 million a year within five years, purchasing fifty-cent eyeglasses from mainland China a million or more at a time and selling them at a retail price of about two dollars. I would spend most of my time designing an effective global marketing-and-distribution plan for both rural and urban areas, and wrap it up with a clear statement of the start-up capital required to implement a three-year plan, how it would be spent, and what it would accomplish. This kind of planning is routine for large businesses or for any entrepreneur seeking start-up venture capital, but it is rare for development organizations.

Thinking big in this way always carries the risk that you will fail in a big way. But if you can't stand to take the risk of failing and looking bad while doing so, you probably should be in a different line of work.

If you want to make the world a better place, coming up with a breakthrough concept or technology is just the first step. The most challenging problem is coming up with a practical way that you can put the innovation into the hands of the hundreds of millions of people in the world who need it.

5. THINK LIKE A CHILD

Coming from a refugee family who barely escaped being murdered by Hitler in Czechoslovakia in 1939 when I was five-and-a-half, I don't want to romanticize childhood. But there is a simple and direct curiosity in childhood and a love of play that we tend to miss badly in our approach to problem-solving as adults. If you think like a child, you can quickly strip a problem down to its basic elements.

In 1996 I was in Cachoeira, the Amazon rain forest home village of Chico Mendes, who founded the rubber tappers' union and was martyred by the cattle interests. I was trying to figure out how rubber tappers could shell and dry Brazil nuts at the village gathering point so they could increase their income. We had to design a village drier to replace the large industrial driers of big-city plants. When we walked through rain forest villages, I saw that every second house had a *forno de farinha,* a two-foot-high baked-clay furnace with an eight-by-ten-foot stove top used to dry manioc flour. When I saw all these ovens used to dry manioc, I realized that each of them could also become a Brazil nut drier. If you think about how to dry something as if you're a child instead of an engineer, you think about how you can warm it and blow air over it, like when you hang a wet towel on a clothesline in the breeze and the sunlight.

So we built a removable wooden house with a chimney that sat on top of the manioc-drying oven, and used the heat coming from the stove top to draw air over the surface of Brazil nuts that were drying on wire-mesh drawers inside the wooden house. We built the first one from scratch in two hours.

6. SEE AND DO THE OBVIOUS

If we can't see our blind spots, how can we begin to see and do the obvious?

Here is an obvious fact that hasn't been incorporated into the plans of most poverty alleviation experts. It took me several years and several hundred interviews with poor families to begin to see it. Three-quarters of the dollar-a-day poverty in the world has its roots in tiny farms. Ninety-eight percent of all the farms in China, 96 percent of the farms in Bangladesh, 87 percent of the farms in Ethiopia, and 80 percent of the farms in India are smaller than five acres. Eight hundred million of the people who earn less than a dollar a day scratch most of what they earn out of one-acre farms that are divided into four or five scattered quarter-acre plots. International Development Enterprises (IDE), the small organization I started, has been able to help 17 million people out of poverty because we realized that creating new wealth on one-acre farms depends on opening access to new forms of irrigation, agriculture, markets, and design.

7. If somebody has already invented it, you don't need to do so again

People are often hesitant to use ideas from elsewhere. I have run into countless instances of the not-invented-here syndrome. Doing a quick world search to see if somebody has already come up with a solution to the problem you're working on is always faster and easier than coming up with something new.

Perhaps the most embarrassing example of learning that it had already been invented came when I was convinced that I had found a new way of delivering water cheaply, drop by drop, to plants by punching holes in plastic pipes and letting water slowly dribble out. Dan Spare, the first engineer I talked to about this great of idea of mine, politely informed me that the Israelis had invented it thirty-five years earlier and that it was called "drip irrigation." I had never heard of it.

So I scanned the world literature on drip irrigation and learned that while the method had spread rapidly, it represented only 1 percent of irrigated acreage, because the setup was too big and too expensive for the majority of the world's farmers. So we went to work to design drip-irrigation systems that cut existing costs by four-fifths, reducing their size to fit small plots.

8. Make sure your approach has positive measurable impacts that can be brought to scale

While we were working on the donkey cart project in Somalia, we ran across a team from International Labor Organization (ILO) that had organized a project to help refugee women make and sell soap. But when we asked how much it would cost to buy some of this soap, it was hard to get a clear answer. We eventually learned that ILO could have bought the finest, most perfumed soaps available in Paris, air-freighted them to Somalia, and sold them at a cheaper price than what it cost to produce the crude soap the refugees were making with ILO's help. When I asked how she could justify this, the program's manager hinted that I had no understanding of the tremendous importance of the self-esteem these women gained from the positive group interaction during the process of making the soap.

On the contrary, I believed that the only real self-esteem raised by this project was that of the ladies in the project team that designed and implemented it. If they were really interested in improving the self-esteem of the refugee women with whom they worked, they would help these women produce something they could continue selling at a profit long after ILO left Somalia. Producing soap at a cost greater than the existing market price for the finest soaps also meant that the project would be unlikely ever to be taken up by other groups of women, so it could never be expanded beyond its original scope.

How many people can benefit from a development project if it proves to be successful? This is one of the first questions to be asked about any idea for a practical solution, since it takes a lot of time and money to implement a project. But often this question is never asked. For example, a few refugees in Somalia who lived in camps beside rivers and caught catfish to sell could broaden their markets by preserving the fish through salting and smoking, since refrigeration was unavailable. But all refugees needed affordable transport services, so picking between fish smokers and donkey carts was a no-brainer.

The only projects worth doing have measurable costs, impacts that are an improvement over their antecedents, and the potential to be brought to scale.

9. DESIGN TO SPECIFIC COST AND PRICE TARGETS

The key issue that prevented the ILO staff from implementing a cost-effective project is that they had little interest in figuring out the cost and price targets refugee women had to reach to be competitive in the local marketplace. Like so many other development organizations, they scorned materialistic measurements such as costs and profits, and had no measurements of impact other than their own belief that the group activity was good for refugee morale.

10. FOLLOW PRACTICAL THREE-YEAR PLANS

You may have a world-changing plan with a stunning vision for the future, but if you can't come up with a specific plan for the next three-year period, you'll never get anywhere. If your three-year targets are too ambitious, you will likely fail long before you have any chance of reaching your long-range vision. If your three-year targets are too puny, you won't lay a solid base for scaling up. As in "Goldilocks and the Three Bears," your three-year objectives have to be not too big, not too small, but just right.

When I wrote a three-page concept note for the Bill and Melinda Gates Foundation, I said that my long-term vision was to increase the net yearly income of 30 million families by five hundred dollars a year, and the foundation was satisfied. But when we started negotiating a specific initiative they could support, they said "Forget the 30 million —we want to see clear evidence over the next four years that you can reach 100,000. Prove to us that you can achieve the specific impacts that you say you can, and then we can consider going on to phase two and maybe even phase three."

11. CONTINUE TO LEARN FROM YOUR CUSTOMERS

About ten years ago, the low-cost drip-irrigation technology we designed and field-tested in Nepal was ready for marketing. By this time we had a good sales force, and several hundred hill farmers within thirty kilometers of Pokhara purchased low-cost drip systems. But sales didn't go up at all in the second year. In fact, our field staff were

dismayed to learn that many farmers who bought low-cost drip systems used only a quarter of the system they purchased. When they interviewed the farmers who had bought drip systems, our field staff learned these were maize and millet farmers who had no experience with the intensive horticulture required to grow off-season vegetables. In fact, there was a widely held belief that it was impossible to grow vegetables in winter in the Pokhara region, which became a self-fulfilling prophecy.

Our Pokhara field staff convinced the Kathmandu office staff, who convinced me, that we would never be able to sell low-cost drip systems until we trained farmers how to use these systems to grow off-season vegetables. We introduced field-based training programs in intensive horticulture, and sales took off quickly. It never would have happened if our field staff hadn't kept talking to our customers.

Each of the last twenty-five years, I have interviewed at least a hundred of IDE's small-acreage customers. All my ideas for projects that worked, and even some that didn't work, came from what I learned from these small-acreage farmers, and now all the people who work for IDE talk to and learn from these farmers every day.

12. Stay positive: don't be distracted by what other people think

Twelve years ago I was championing two affordable irrigation technologies. The first was an animal-powered treadle pump, which produced as much water as a small diesel pump. A lot of people told me that if an animal-driven treadle pump putting out five liters of water a second were needed, it would have been developed long ago. I ignored them. A five-horsepower diesel pump cost $500 then, and I knew we could produce a bullock pump for $125, a pump that "burned" fodder instead of diesel. So I kept pressing till we had a marketable reliable bullock pump ready to go.

At the same time, I was convinced that a small-plot drip-irrigation system that could be bought at about a fifth of the price of conventional drip would command huge global demand. People told me if there really were a need for such a system, the market would have introduced it long ago. But I was convinced that millions of small-acreage farmers

could earn big money from drip-irrigated vegetables. It took seven years to bring the first low-cost drip systems to market.

By the time the bullock pump was ready to sell, Chinese diesel pumps were available for one hundred fifty dollars instead of the five-hundred-dollar price farmers paid two years earlier, and the bullock pump was no longer cost-competitive. I had no regrets. We had good reasons to develop the bullock pump, and we had good reasons at that point to put the product on a back burner. The global market for low-cost drip irrigation, however, looks to be huge. I think at least 10 million poor families will buy a system.

Most breakthrough solutions to important problems, such as Henry Ford's five-hundred-dollar automobile and Jobs and Wozniak's two-thousand-dollar computer, came about because one or two stubborn entrepreneurs saw new solutions to old problems and persisted until their dream became a reality. Why should solving the problem of poverty be any different?

I have set a target for IDE of ending the poverty of 30 million dollar-a-day families by the year 2020 by using these twelve principles, and I'm sure we'll make it.

this material has been excerpted from

Out of Poverty:
What Works When Traditional Approaches Fail

by Paul Polak
Published by Berrett-Koehler Publishers

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