Chapter 7

Finding the Essence

Imagine yourself on the back of a motorbike taxi, buzzing through the scarred concrete streets of Ho Chi Minh City's outer residential neighborhoods on a sweltering June morning. You fix your gaze on the rows upon rows of TV antennas jutting from rooftops and contemplate their statement on status symbolism and technology adoption, until something at street level grabs your attention. It's not much: a large bottle containing three or four liters of semitransparent liquid, perched atop a brick, attended to by a kid, no more than ten years old, who holds a length of plastic tubing in his hand and watches to see if you'll stop. Your driver pulls over. You've arrived at the gas station—not just any gas station, but the very *essence* of a gas station.

Everything you take for granted in your typical gas station experience has been stripped away. All that's left is a bottle of fuel, sitting slightly higher than the fuel tank it aims to fill, a hose to transfer fuel from the container to the tank, and an agent for collecting payment. It's so rudimentary, and yet so

pure—it would be impossible to take anything away and still have a functioning gas station.

When I came across this setup for the first time (I've since seen it in Indonesia, Tajikistan, and several other developing countries) it was startling enough to force me to unlearn everything I had assumed about something I'd long taken for granted—the gas station experience. When you peel back all the layers of the typical American (or Chinese or German or British) gas station—the towering branded sign shouting the price-per-gallon in foot-high numbers; cars sidled up against a half-dozen pumps and sheltered by a large, framelike canopy; an attendant tucked behind a thick layer of security glass; security cameras; the convenience store stocked with fresh coffee and an assortment of snacks; the dirty bathroom—what you're essentially left with is a bottle on a brick.

If you know what you're looking for, seeing something in its purest possible form is inspiring, but what does it mean to find the essence? How do you know what you're seeing? And what do you do with that "bottle-on-a-brick," so to speak, when you discover it?

We all grow accustomed to the world around us. Objects, as they become more familiar, blend into the landscape and once-novel practices that required forethought at every step become automatic. We stop asking questions because the answers, the ways things work, appear obvious, even when they're not—or when the origins of that obviousness are long forgotten.

But if we start stripping things back to the bare essentials, we can build or rebuild our understanding of services from the ground up. We can also take the same essence and use it as a

starting point for designing variations of the same service for different markets, developed or developing, so that the front ends speak to the nuances of each market—to actual customers, on the ground, in their daily lives—while the back end leverages core processes and infrastructure.

One way to think of a road map of possibilities for a given product or service over time is as in the shape of a cone, starting from a clear point that marks the present and expands continuously into the future. And what could be more emblematic of such a simple starting point, unencumbered by assumptions, than a bottle-on-a-brick? With that simple image in mind, it becomes easier to explore any number of design directions.

The cone is only meant to suggest a theoretical range of options. Once you start heading down a specific design path and incorporate more and more options, you run the risk of falling into the trap known as "creeping featurism," a bad habit of adding more and more layers of functions and features that ultimately prove more bewildering than useful. Don Norman, in his influential book *The Design of Everyday Things*, describes creeping featurism as "a disease, fatal if not treated promptly," which can be cured with a heavy dose of organization, but "as usual, the best approach is to practice preventive medicine." John Maeda, the designer and now also president of the Rhode Island School of Design, preaches the mantra "simplicity equals sanity." In *The Laws of Simplicity*, Maeda sets down ten laws for designers to abide by, the first two being Reduce and Organize, which also happen to be Norman's proscribed cures for creeping featurism. Arguably, the best way to abide by those laws is to hew as closely as possible to

the essence, and at the very least make sure that the essence isn't obscured by nonessential bells and whistles.

There are several ways to find the essence, all of which involve some form of mental reframing. In the design world, we talk about seeing products and services with "fresh eyes," bringing new perspectives to a project to get a different sense of what things are and what they could be. Fresh eyes can come when new members are injected into a team, but we can also refresh our own eyes by aiming them in new directions, and by using methods that force us to reevaluate what we have long since taken for granted.

Over the years I've found inspiration in highly resource-constrained communities (what you might call "poor," but of course poverty is relative), often in developing countries, but also in certain pockets of more developed ones. Let's take two examples: one from a reasonably well-off community in Kobrasol, Brazil, and another from Ulaanbaatar, the capital of Mongolia. In the former, I once came across a photo booth that looks just like the kind you'd find in London, Tokyo, or Paris but with one notable omission—it doesn't include a camera. A photo booth without a camera might sound like an oxymoron, but it's actually nicely attuned to the local availability of resources. The core of the booth-oriented service is providing a standardized identity-card photo background, but the print shop in which the booth is located provides the camera for other services beyond simply taking booth-style passport photos. Over in Ulaanbaatar, I've found "mobile phone kiosks" that consisted of bulky landline-style desk phones (though not actually connected to

landlines, as they were powered by battery and contained SIM cards) carried by a kiosk operator walking in step with her customer, resulting in a beautiful urban choreography where the customer was simultaneously mobile and tethered by the phone cord. While the desk phone form factor was very much of its time (2005), and many of these customers would now own their own mobile phone, the "mobile phone kiosk" service revealed the nuances of where the demand for the service was greatest, and allowed customers to walk and stay warm while making a call—Ulaanbaatar in midwinter is not the kind of place where you want to stand still outside for too long (but it's great for a Friday night out if you're ever in the neighborhood).

While the streets are great for scoping out leads and hunting for clues, we use a variety of techniques during research projects to complement this ground-level activity. The simplest is to systematically observe use; to ask questions around why people are doing things in a particular way. Almost every study involves spending significant time in people's homes, where they're most likely to do things "their way." Another is to track data on actual use. In more formal research settings, we also sometimes ask our participants to (figuratively) strip down a product or a service to its core reason for being. Participants are provided with a blank slate, and it's up to them to decide what features to include, provided that they can fit all their desired features into the "budget," which allows for somewhere between only one-third and one-half of the usual features. This exercise forces participants to think about which features they value most and how the ones they choose might interplay with one another, and it

gives the research team a different kind of insight about consumer preferences than a simple list of features ranked from most to least important. Each approach carries its risks—for example, some people are better at articulating why they prefer one thing to another, and many people struggle to articulate forward-looking needs—but a skilled research team knows how to mitigate them and draw out the right kind of information and inspiration from each session.

Back in the office there are many other systematic ways to reframe what a service could be, using various stimuli to take the team in different directions. These are often presented through different lenses—for a project on banking this might include what security, convenience, or the notion of "good service" means to a bank's customers, or what their technological landscape looks like. The reasons why things are done in a particular way are often told through personalities (or personas, archetypes, or actual consumers that match a particular market segment), drawing on the rich firsthand field data. Processes such as buying gasoline, making a phone call, or even making a cup of tea can be mapped out step by step and reimagined. Frameworks (including the threshold framework) can be introduced to put findings into perspective and encapsulate what the team deems important.

A common workshop activity is to introduce lateral thinking exercises (such as those devised by Edward de Bono) that put the team and clients together in a room, incorporating a series of tasks to break down the team's preconceptions and forcing them to figure out how to integrate something completely incongruous into that picture. For example, we might be looking at a service like commercial banking, and our left-field stimulus could be a fluffy Chinese panda toy. We'd start by mapping out all the properties of the panda toy: color, texture, cultural implications, production quality, and some slightly tangential panda-related ideas like endangered species, artificial insemination, and the World Wildlife Fund (which uses a panda in its logo). Then we'd move on to mapping the attributes of commercial banking, and then brainstorm how to work in panda attributes in some way. The starting point might be the iconic form of the panda, but the discussion might move to figuring out what the banking equivalent of artificial insemination could be.

Building a process around this sort of essence-level brainstorming provides structure for creative ideation, which for most people is extremely difficult unless they're able to escape the constraints of their assumptions. It's a process of deconstruction and reconstruction, and it can lead to some wild, fun, and most likely impractical ideas. But it can also lead to some that seem like common sense—the kinds of ideas that might be way off your radar and yet make you say, "Why didn't I think of that?" Those insights tend to be the ones that capture the essence better than any of the others. A guy in a panda suit greeting customers as they walk into a bank is an obvious idea but not a commonsense one. On the other hand, giving bank customers tools to make sure their money is safe, anytime and anywhere, so that they feel as secure as a child cuddling a big plush panda—that's about as close to the essence of banking as you can get. While this level of cuteness might grate on your mental model of what you want from a banking service, in countries such as South Korea or Japan it's simply run-of-the-mill.

The Gas Station, sans Gas

Imagine you're an alien visiting earth for the first time and you come across an English soccer match in progress; how would you describe it to your fellow aliens? One very simple way to describe the scene was that twenty-two people were chasing a pig's bladder around a patch of grass.

The value of this exercise is not just to show how things could be misconstrued when they become abstracted to a certain point, but also what sorts of ideas and assumptions can come of building up from that point of abstraction. If twenty-two people were chasing a pig's bladder around a field, perhaps the central objective might be to kick it into a net, but it might also be to capture it and destroy it. Or the objective might be to annoy the odd-looking twenty-third man, dressed in black, whose tortured role is underlined by his occasional piercing and obviously painful whistle. Or, in a society where gardening is elevated to religion, the purpose is to aerate and sear the sacred grass using slaves wearing specially designed boots.

As a design exercise, the process of stripping something down to its core is wonderfully rewarding in itself, and perhaps the completely stripped-down version presents a striking elegance that could offer unique value in the marketplace. But the deeper understanding of that core comes in the reconstruction, especially when you consider how a product or service would fundamentally change if something else were at the core.

What would happen if the essence of a gas station weren't a bottle on a brick, but some currently peripheral aspect of the experience? Say you're an alien checking out a gas station for the

very first time: watching people pull in, head inside the convenience store, browse for a bit, stand in line to pay, and then at the last moment make impulse purchase decisions. What if your assumption was that the whole experience was created to trigger impulse-purchasing behavior?

If that were the case, think about how the whole station might be built up from that focal point. Queues could be carefully orchestrated so that every customer had to wait long enough to be properly exposed to tempting goods on display within arm's length of the queuing area, but not so long that they would leave out of frustration. Gas could simply be bait for larger purchases—for every gallon you buy you get an extra percentage discount on a new TV or dream vacation.

What if the core function of a gas station were to facilitate dating? The design of the forecourt could facilitate interaction between potential partners, with clear lines of sight between customers to check out each other (and each other's vehicle). The gas-filling process could provide enough waiting time to strike up a conversation, but not so much that customers were committed to a dud interaction. Attractive attendants could provide services like washing windshields, checking oil and other lubricating fluids, inflating tires, and bringing snacks and beverages to customers. The end of the process might provide a natural way to transition to somewhere a little more intimate. Will there be a point where the gifting of gasoline is considered the universal sign of affection, akin to chocolates or diamonds?

What if the gas station were based around a concept of being a specialty purveyor of fine all-hours food? Or the best bathroom

in town? Or even something radically different from the current setup, like an art gallery or an amusement park?

The point of the exercise is not to try to come up with the most ridiculous concept, or to skip past the ridiculous ones and focus on the ones closest to the current core, but to understand how each nonessential layer repositions the whole experience. It can also give you some sense of how a person with no need for the core function might think about the experience. For someone who needs to use the bathroom and walks past a gas station, a bottle of gasoline on a brick won't do them any good, but if the station were designed in a decidedly different way, he might be tempted to make an impulse purchase (or use a dating service).

The other value in the exercise is to reconsider the core in light of the introduction of a new technology or standard. Consider that at the turn of the twentieth century, gasoline was sold by pharmacies as a niche product for the few people wealthy enough to own cars, and who were also typically wealthy enough to employ drivers who could maintain those cars. As more and more middle-class Americans became car owners, service stations popped up across the country, offering what we now think of as "full service," administered by attendants who would pump fuel, check oil and other fluid levels, inflate tires, and offer any mechanical assistance needed. "Service" was really the operative term, and the essence of the experience. Major chains like Texaco and Gulf advertised the friendliness of their attendants, and lured customers with free road maps as part of their brand promise: to help drivers get where they needed to go.

As cars became more reliable and thus required less frequent maintenance, and new technologies made it safe for drivers to pump their own gas and allowed them to pay electronically, the essence shifted away from service to refueling—not only for cars but for drivers as well, with convenience stations offering snacks, beverages, cigarettes, and restrooms.

Although both the "service" and "pit stop" paradigms offer far more than a bottle-on-a-brick, they could each be considered the essence of a gas station within their respective contexts, because they provide additional services that have become virtually essential aspects of the business. Of course, what passes for necessity in one place doesn't always travel well around the world.

For instance, after the Japanese government deregulated gas stations in 1998 to allow self-service, many drivers refused to make the switch from full service, or did so with great trepidation. "I'm afraid I'll set the place on fire," one Japanese mother of two told the *Los Angeles Times* as an attendant coached her and other drivers shortly after the switch. Even a decade after deregulation, only 16 percent of all gas stations in Japan were self-service, and the Japan Automobile Federation continued to receive requests for help from drivers whose cars had broken down because they had mistakenly pumped the wrong type of fuel.*

As for American "pit stop" gas stations, which have struggled in recent years—since 1991, when there were almost 200,000 stations in the United States, more than 50,000 of them have shuttered, according to the National Association of Convenience Stores—profits from sales of gas are hard to come by, so

* The issue of putting the wrong type of gasoline into the tank has largely been solved through the use of pump nozzles that can only fit into the appropriate type of tank.

snacks and drinks are indispensable to keep the remaining stations afloat. The owner of one particularly famous station in Washington, D.C., has even adopted a particularly distorted market strategy: jacking his gas prices sky-high, sometimes a dollar more per gallon than the station across the street. Why? "He doesn't want to sell much gasoline," Dan Gilligan, the president of the Petroleum Marketers Association of America, told the *Washington Post.*

Still, as long as people keep driving automobiles, they'll need to get their juice somewhere. But, going forward, will the "pit stop" remain at the core of the refueling/recharging experience, even as more and more cars run on electricity instead of (or in addition to) gasoline? The predominant model for public charging so far, putting chargers next to parking spaces, has been much closer to the bottle-on-a-brick than the pit stop. Since electricity doesn't require a large underground tank and pumps (a minimally accoutered charging stall needs only a few square feet of real estate, no more than a phone booth), it's easier to distribute large numbers of these "stations" around cities rather than at select intersections. We may also see more centralized stations that offer battery swapping, a rapid alternative to the twenty- to thirty-minute process of recharging a car battery, but one that requires more infrastructure to warehouse and charge larger numbers of batteries. In High Falls, New York, in the Hudson River valley, a reclamation project is renovating an abandoned gas station and converting it into a charging station, yoga studio, and wellness center. At what point do gas stations go the way of phone booths, or, to a lesser extent, traditional Main Street banks?

It seems like charging a vehicle in the city may simply become an incidental aspect of stopping and parking while doing something else, like shopping or dining. But what about highway travel? What will be the essence of a charging station out on the open road? Will station owners have to build in experiences, perhaps miniature theme parks or video arcades, to keep their customers entertained while waiting? There are nearly infinite possibilities for what they may be able to do, but the opportunity lies in figuring out what their customers can't do without.

Building an Un-Frastructure

If you're willing and able to read this book, I'd venture to guess that you have at least one bank account, most likely more than one, with myriad ways of accessing your money, from debit cards to ATMs, a checkbook to a mobile banking app. Once most people have access to this level of service they don't spend very much time thinking about what they like about it, much less thinking about the essence of what it offers them. At its core, banking is about keeping it somewhere safe until it needs to be retrieved, and being able to transfer that money to others wherever they are. Needless to say, losing all of your (or your family's) money is a threat to survival, but that threat is primarily felt by people who don't have access to these fundamental services.

This is precisely the kind of notion that clients in the financial services and banking space like to explore, to challenge their own idea of what a bank is and does. Unfortunately they often lack a sense of how to reset assumptions and build something

fresh that still addresses the core motivations driving customers to hand their money over to banks.

For many people living in developed countries, banking is woven tightly into the fabric of their lives and culture, so it can be hard to fathom what it means to lack access to banking and what the pain points of "banklessness" look like. It's also difficult to study in our own backyards, without taking the highly unethical step of taking away people's existing access and asking them to try surviving without financial services. To see beyond the obvious, we have to travel to places where making a withdrawal literally means reaching under the mattress for a wad of cash.

The gap between developed and developing countries in terms of access to financial services is striking: about 49 percent of households around the world have deposit accounts, but that ranges from close to 100 percent in Japan to less than 1 percent in the Democratic Republic of the Congo and Afghanistan. Access is growing, but the numbers don't always add up to significant gains. For instance, from 2008 to 2009, the nation of Burundi (population 8 million) doubled the total number of ATMs across the country—*from 2 to 4* (using an ATM as a signifier of more formal banking services). In contrast, Canada, with the highest concentration of ATMs per capita, had about one for every 458 adults. But regardless of nationality, people are driven by the same basic motives when it comes to their money. The difference is that, in a place like Canada, if you ask someone why he puts his money into bank accounts, he might say, "Because that's where it goes," whereas if you ask a Burundian with no bank account why he sews his money into the lining of his coat, his response is paradoxically more likely to tell you about the

essence of banking: he wants his money to be safe, until the very moment that he needs it.

If you asked a Brit or an American forty years ago what a quintessential bank looked like, you would hear descriptions of marble floors and thirty-foot-high ceilings, velvet-roped queues and tellers behind windows, big vaults and the big gentlemen in pin-striped suits who had access to those vaults. Today the architecture is more unassuming, but the idea of a bank, to its customers, is less about the branch and more about the ATMs, the online services, and increasingly mobile apps. None of that, however, is really at the core. It still is, as it always was, about safety and access. All that infrastructure is just the shell, and it follows the same metaphor of technology adoption and abandonment that we see in other realms: we are all hermit crabs, wherever we live and whatever we do, and we inevitably migrate from one shell to another when we find one that better suits our needs.

As we learned in chapter 4, safety and access mean different things to different people. For those who value tangibility as the only guarantor of something's existence, there will always be a need for secure containers of money, whether they use vaults or mattresses. For others who put their faith in zeroes and ones, a line on a computer screen that tells someone she has $20,000 to her name is enough to make her feel like she and she alone is in possession of those $20,000. A bank can wrap any type of shell it can fathom around that essential core of safety and access, as long as it's a shell that dutifully encapsulates that core.

And in some cases it's not even a shell—at least not a physical one. Take, for instance, mobile money transfer services, such

as M-Pesa in Kenya, that rely entirely on mobile networks and people networks rather than the more traditional physical banking infrastructure. With M-Pesa, consumers can sign up for an account through their mobile phone, and deposit or withdraw funds through agents in much the same way as they were buying and "transferring" prepaid airtime, as discussed in the story from Uganda in the introduction. Simple, a web-based service that issues payment cards, allows deposits through smartphones and withdrawals through ATMs, money transfers, and bill payments. And yet, as their site proclaims, "Simple is not a bank. Simple replaces your bank." It has no branches, no vaults, no tellers, and no lines, but it is FDIC-insured. Before it even launched, Simple had more than 100,000 prospective customers who had requested to be put on its waiting list. It works because it attends to the essence of what people want for their money, built from the ground up using today's dominant mode of technology, and with the promise of transparency regarding fees.

The idea of stripping away banking's infrastructure and getting down to its essence of safety and access opens up a huge cone of possibilities, and makes for a good thought exercise about the ups, downs, and tradeoffs involved in what could be. What if we could access banking services (or certain aspects of banking) at any sort of networked access point? Instead of through ATMs and cash registers, why not connect with your bank account through transit fare ticket machines? What if every vending machine in the city could serve as a summary display for your bank account details, like the Tokyo vending machines that display your account balance? What if every point-of-sale terminal were your printer, and not only printed

receipts but whatever sort of data you wanted? (Again using the Tokyo transit system as an example, the ticket machines that top up transit cards can also print out records of any given card's use by date, time, and location.) Or what if every point-of-sale terminal was an ATM? And what if every mobile phone was a point of sale? What would it take for you to be able to turn to the next person in line (whom you've never met before) and have them pay?

The Cone of Possibility, the Cone of Opportunity

When it comes to the actual task of finding the essence of a product or service and then building new possibilities, start-ups have a natural advantage. After all, no one can reasonably expect their local gas station to tear out all the pumps, the tank, and the convenience store and replace everything with a massive bottle perched atop a massive brick (tempting though it may be). The sunk costs of existing infrastructure can greatly narrow the cone of possibility, but it may also narrow the cone of opportunity, especially when customers are ready to change shells before a business is.

Start-ups also possess the power to tickle the imagination, especially for the techno-optimists out there who see utopia on the other side of today's frontier. There is no shortage of dreamers, like the libertarian "seasteaders" who want to create brand-new, self-ruling cities, set afloat in international waters where existing governments can't infringe on their ideas (or their pocketbooks).

But there are also plenty of cautionary tales from new ventures that set out to capture the absolute purest possible essence of something, only to strip away a bit too much and miss the mark. For example, we can look back now on the rollout of the Tata Nano, which promised to revolutionize car ownership by developing the absolute cheapest possible car in the world. What the makers of the Tata Nano failed to realize was that the essence of car ownership is not just four wheels and an engine, but also the social status conferred by being a car owner—which in the Nano's case was the stigma of being seen as the owner of the cheapest car in the world.

And while up-and-running ventures lack the wide range of possibilities inherent in start-ups, they have the not-to-be-underestimated advantage of experience. Past success, while no means an indicator of future results, is usually a sign that beneath all the accumulated layers of features and widgets and amenities lies a legitimate understanding of essence. There's nothing wrong with a gas station that offers far more than a bottle-on-a-brick. But in order to understand the value of those additional layers, and find out what opportunities lie in adding or subtracting them from the equation, it's quite useful to imagine peeling each one away to see whether its absence indeed makes the heart grow fonder or whether it's just dead weight.

If simplicity is akin to sanity, finding the essence is not a wholesale brainwash, but rather a reality check.

Chapter 8

The Great Tradeoff

It is probably the world's most underrated conundrum, faced by tens of millions of people every day. Make the right choice and a timely ablution waits; make the wrong choice and receive minor embarrassment, discomfort, and quite possibly a haranguing from a member of the opposite sex. Our near-universal competence in making the right choice is a testament to our ability to draw on our understanding of how the world works, taking in and processing an array of visual, audio, tactile, and olfactory cues, and to translate the stimuli into that all-important decision: choosing the proper door to enter for either the men's or the ladies' room.

Public restrooms may not immediately spring to mind when you think about designing user experiences, but in fact they serve as valuable examples of the power that all kinds of designers and innovators wield in altering the tone of everyday people's lives, for ease and comfort but also (typically unintentionally) for vexation and shame.

Public restrooms provide an invaluable service, as they're used throughout the world by a wide swath of population across all ages, genders, ethnicities, and levels of income, education, and literacy. For some, a public toilet is a last resort; for others, it's the only option aside from finding a patch of land to squat over. Everyone needs to go at some point, and when you gotta go, you gotta go. And when you gotta go, as you approach those two doorways, the line between relief and humiliation can be as thin as the paint on the signs that distinguish ladies' from men's.

Stand in front of the toilets in Bangalore's century-old City Market at the end of the day and you'll find your senses assaulted. Aside from the natural decomposition of vegetables and flowers under the intense summer heat, you'll be faced with the collective pungency of urine from hundreds of market-goers, mainly emanating from one side of the building (peeing men tend to miss the toilet bowl or hole more than women do, and the scent lingers). Even if you've never stood in this spot before, the smell wafting out of the building would be enough to suggest its purpose as a public lavatory. As you might expect, there are other clues to what goes on inside: the words *gents* and *ladies* in English to the right of each door, and their Hindi equivalents

पुरुश and महिलाएँ

to the left. You'll also see large painted pictures of a smart, blue-shirted, mustachioed man and a sari'ed woman along with the names by each door. You could also draw on a lifetime's worth of experience vis-à-vis the use of public toilets in

other locations, or the observation that men are streaming in and out of one door and women the other. All in all it's a rich environment, with each layer of contextual clues reinforcing the next. But we've all been in situations where the contextual clues that we would normally use to make the decision were missing.

A few years ago I was at a truck stop several hours outside of Tehran, my driver was sitting out front ordering tea that would in the end contain more sugar than water, and I was out back trying to find the restroom—or rather to decide which one was for me. One door was marked "آقایان" and the other "خانم ها." There was no color coding or iconography; the smell emanating from each room was the same subtle disinfectant; even poking my head through each door yielded nothing—just an identical view of a sink, flowers in a vase, and a row of blue-doored cubicles. Most men get reassurance from seeing a row of urinals, but these were missing—in Iran the government has mandated squatting as the position of choice for ablutions, with the side benefit of far less odor from pee-splash, thus leaving out another subtle cue. I flipped a mental coin, made my choice, and walked in. On the way out I noticed a stocky gent walking out the other door.

I had taken a fifty-fifty shot and missed, but all my guesswork could have been easily resolved if someone had simply placed masculine and feminine pictograms (or just masculine, given the cultural norms about depicting the female form) on the doors. However, the restroom door is a relatively simple design challenge, and most other products and services require far more complex operations than simply choosing which door to

go through. Consider how many steps go into shopping online, booking a flight, printing a photo, or setting a washing machine for delicates, and consider how the choices that go into those steps rely on cues designed into the process itself, rather than from the world around it.

A great deal of effort goes into thinking about what kinds of people are likely to want to use, consume, or interact with a particular product or service, and what they want (and don't want) out of that experience. It's possible to make a product like a laptop or mobile phone virtually indestructible, but if the extra materials that go into its construction add to its cost, especially its cost relative to competing products, then consumers must make a tradeoff between cost and durability—and any tradeoff for consumers becomes a tradeoff for the people who design, build, and market the thing. If it's a product that consumers will quickly outgrow, or they plan to throw it away after a few uses, you could argue that devoting design resources to durability would make it a suboptimal design. Money spent on making it super-robust could be used on improving other aspects like screen resolution or weight, or could be saved in order to lower the cost of the device, dropping it into the price range of a wider range of consumers.

In a world where a single product such as a mobile phone could potentially sell in the tens if not hundreds of millions—the iPhone, for instance, sold more than 72 million units in 2011 alone—how do you know when to design something that works pretty well for everyone, something that works great for a subset of people, or something that works perfectly for only a handful?

And how do you deal with the ethical ramifications of catering to some people at the expense of others?

For instance: should a mobile phone manufacturer develop a special phone specifically optimized to be easy for illiterate people to use? It's a hypothetical question, with a great deal of emphasis on the "should" and "optimized" ends of it, but one that I was tasked to investigate for Nokia in 2005, after it had puzzlingly begun to see its phones bought by illiterate people who, by most definitions,* shouldn't have been able to use them.

At the time, Nokia was selling more than a quarter billion phones per year, and one in every three phones sold worldwide. Every one of those phones was designed with alphanumeric interfaces for people who could read and write, but many of them were being used by people who couldn't, resulting in a suboptimal user experience. Many of those phones were models like the iconic Nokia 3100: a simple, blockish handset with a black-and-white screen. Years earlier, the talk in the industry was that this type of phone would quickly fall into extinction as users in developed markets migrated to color screens and other bells and whistles. And yet that model had become the dominant growth engine for the company (as well as others, like telecoms, in the mobile ecosystem), delivering functionality at a price point that was acceptable to a broad spectrum of consumers in emerging

* The original 1958 UNESCO definition of literacy: "a person is literate who can with understanding both read and write a short simple statement on his or her everyday life, and can apply this knowledge to function in a textual environment."

markets—not just wealthy people in those markets, but even those on the bread (or rice) line.

Nokia owned the market for entry-level phones not only because they offered the right products but also because they had made an early investment in an incredibly strong distribution network, which proved critical in countries such as India, where 70 percent of the population lives outside urban centers. You could head out into pretty much any village and find Nokia phones for sale, perched atop sacks of rice and beans in small trading stations. The upshot of this success was that Nokia's products were being used in ways and places far beyond initial expectations, and in the process reached the consumer segment at the very base of the economic pyramid—an uncharted territory for most technology companies. And at that base, of course, illiteracy levels are the highest. Yet, surprisingly (to us, at least), illiteracy didn't necessarily prevent people from buying and using mobile phones.

When Suboptimal Is Optimal

Illiteracy is a challenging and beguiling puzzle. Some people and organizations consider it to be a disease that demands eradication, and yet it's a condition that we are all born into and one that will, by the very nature of how we develop over a lifetime, continue to exist. But the notion of illiteracy, and what it means to be a literate or illiterate person, also has a deep and fundamental impact on the relationship between people and the things they use in their everyday lives.

While there are very many definitions of literacy, the most common definition refers to *textual* literacy: the ability to read and write. Literacy, like most other skills, sits on a continuum ranging from totally illiterate to highly literate. The benefits of literacy tend to kick in when a person is able to apply that knowledge in a textual environment, whether reading signs in a marketplace or navigating a phone interface. Taking one step back, literacy can also be defined as a capacity to derive meaning from symbols or symbolic stimuli (after all, letters and words are but symbols). Textual literacy and numeracy (arithmetical literacy) are both extremely valuable skill sets for functioning in an information-based society, and as such they're critical components of schooling. However, people also develop other forms of literacy through unstructured learning and life experience, such as visual literacy, deriving meaning from how things look; observational literacy, deriving meaning from how people and things behave; tactile literacy, deriving meaning from how things feel; and aural literacy, deriving meaning from how things sound. The extent to which we are able to function in a given environment often depends on how well we apply a combination of these skills.*

Illiteracy is, arguably, fundamental to the human condition, in that every single person lacks at least some amount of knowledge that other people possess, and every deficit of knowledge comes with the cost of being unable to perform certain tasks

* On that note, I'd like to thank my coresearchers over the years, including Zeenath Hasan, Fumiko Ichikawa, and Yanqing Cui.

without assistance. Nobody is expected to know everything. Everyone is illiterate in some regard.

There are also moments when otherwise literate people function as if they were temporarily illiterate: when we forget, or we're distracted, or we're tired, or for any other reason that could cut off our ability to apply our mental capacity to something that requires some form of literacy. In that sense, a person walking across a street with a phone in hand is inherently partially sighted: either she's looking at the screen or she's looking at the vehicular and pedestrian traffic, but either way she's blind to one of those. Just as we are all blind at some point, we are all deaf, we are all paralyzed, and equally we're all illiterate. We are especially illiterate when it comes to cross-cultural understanding, most obviously because of language barriers, but also with regard to cultural practices.

The literacy gap can be overcome by any number of strategies people employ, not necessarily involving actual learning. One such strategy is *proximate literacy*—essentially asking more literate people for help. Many would consider this a form of dependence, but another way to look at proximate literacy is as a form of entrusting certain tasks to literate friends, relatives, or helpful strangers. In this sense, the strategy for some of the poorest members of society is the same as for some of the wealthiest: delegation.

Imagine an illiterate farmer needing to send a text message to a relative in the city, along with some instructions about sending money for a dowry and the timing of the wedding. Even if the farmer was sufficiently motivated to learn by rote how to open and send a new text message (to navigate the phone's interface, that is), he would struggle with editing the message, which would require an understanding of how the letters go together to form words (or, in a text message, abbreviations), and how to meaningfully string those words together into sentences with grammar appropriate to the receiver. Even if it were sent, there would be limited certainty that the message was received or understood. In this context, the strategy of asking for help makes complete sense: the farmer may not be literate, but within his social network he knows and relies on at least a few people who are. These people may not be nearby at the moment he needs one of them, so it might take hours or days to send the message. Also, because the person typing it in would be privy to the content of the message, it may take longer to find an appropriate person who can both assist and be trusted to "overhear" sensitive information. In communities with high levels of illiteracy, there is greater demand for this sort of assistance, and the practice of proximate literacy is considered more socially acceptable.

The Nokia study on illiteracy and mobile phone use turned out to be quite extensive, and the research on proximate literacy ultimately made it clear that a phone designed for illiterate users would have to be reframed to take into account this wider sense of competence. Put simply, what could users achieve by themselves *or* with support from others? And how did they decide what strategies to employ to be able to do the things that they wished to do? If the only thing a user wanted to do was receive calls, then "all" he needed to learn was how to keep the phone charged with power and airtime (the latter task often completed by the airtime seller), and to press the correct button when it

rang. If his motivation was to make calls, he obviously needed to master the basics of navigating a phone menu, including how to retrace steps if there were errors, and how to recognize and type in numbers (often matching the number shapes on the keypad with the number shapes on his scrap-of-paper address book).

Another surprise finding in the research was that there were consumers who were literate in a particular language, such as Hindi, but were using a mobile phone whose interface did not support that language (even if there were other devices available on the market that supported their language). To understand what this entailed, think about whether you would use a highly desirable, high-value object like a mobile phone or car if its interface was in a language you didn't understand, rather than an alternative object that was less desirable but had a more comprehensible interface. In some contexts it would be fine to choose the easier-to-use option, but in others you'd generate significantly more social capital by being seen with the more prestigious status symbol.

The research conclusion was that it was better to continue selling more of the phone models that were already on the market, with a few subtle but important user interface tweaks, than to develop something wholly new and fully optimized for the specific needs of this particular consumer segment. The barrier of difficulty that we once assumed would overwhelm illiterate consumers was actually as surmountable as the extent to which they were able to tap their extended social networks and the occasional stranger for help. Using the existing phone, albeit with assistance, was more important than having it optimized for their special needs.

There were many other reasons why developing a dedicated product for illiterate consumers was not appropriate at that time. The social stigma associated with buying a device perceived as being designed for "disadvantaged" consumers would be a disincentive to purchase;* illiterates wanted the same device that everyone else had, because they aspired to be treated like everyone else. Furthermore, the costs of designing and testing a new device, getting it into supply channels, and educating sales and marketing teams versus the economies of scale of selling a few hundred million more of those that were already on the market risked making the price to consumers prohibitive. An optimized device would not necessarily have made a genuine difference in the lives of the people we initially thought it might help.

Although that outcome stuck in the craw of purists and ideologues who believed that such a device really would have been life-changing, the reality was that a notionally suboptimal device was good enough, and even superior to one that could have been engineered and designed better but at the risk of missing bigger-picture issues: a higher price tag, lowered social status, and the not-insignificant inconvenience of learning a new product.

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* One of the better examples of appealing to "disadvantaged" consumers is the Japanese mobile operator DoCoMo's Raku-Raku series of phones designed for the elderly. The first versions, with a highly simplified interface, big buttons, large typefaces, and support for a physical address book, performed poorly in the marketplace, but when the designs shifted so that the phones appeared on the surface to look like most other devices on the market (while still sporting usability features geared toward elderly consumers), they became some of the top sellers.

Still, if I were asked to pursue the same question today, my answer may well be different. Many of these illiterate consumers are now on their third, fourth, or fifth phones, so they're well versed in learning to use new interfaces. Connectivity is both more reliable and faster, which makes the learning process more consistent. The cost of devices is now significantly lower: companies like Huawei and Nokia are increasingly putting touch-screen technology in the hands of lower-income consumers in emerging markets. Those touch-screen devices enable direct manipulation, rather than text inputs and menu navigations, making more complex tasks easier for an illiterate person to accomplish. And voice recognition technology has improved greatly, which means a nontextual interface that can recognize much more varied and nuanced language inputs, so we're closer to being able to talk to devices and have them talk back.

In hindsight, the illiteracy study offers a valuable example of the importance of timing, as well as the pitfalls of deep-rooted assumptions about consumers and their lives. The organizational assumption at that time (if anyone can truly speak for a geographically distributed organization the size of a small town) was that illiterate consumers would want to buy a phone designed for illiterate consumers. There was a time before the study when mobile phones were still considered luxury items for the wealthy, and we thought it would be crass to try to foist them on the people at the bottom of the economic pyramid—that the poor wouldn't be able to afford mobile phones or have much use for them. Hundreds of millions of low-income consumers have proved that assumption wrong.

Some people have wondered whether it was an ethical failure to pay minimal attention to bottom-of-the-pyramid consumers in the earlier days of mobile phones. Would it have been an ethical failure if we had built a phone for illiterate users without first evaluating whether they wanted or needed one? In both cases I would say no, but the reality is that the best way to do right by the people on the other end of the transaction is to understand how they tackle their own problems, rather than presuming to know how to solve those problems for them.

The idea of an "optimally" designed product has its allure, but optimal for whom and for what purpose? Optimal could mean faster, cheaper, lighter, higher quality, or more robust in any number of areas. And given that there's more than one notion of optimality, how do you reconcile the differences? And who gets to decide?

We're all inherently bounded in our perspectives by various -centricities: ethnocentricity, egocentricity, maybe even a bit of eccentricity. As hard as we try to understand new contexts and the people who live within them, it's easy to miss a beat, particularly coming at it from within a large corporation. Something that doesn't seem optimal from a developed-world perspective might be optimal from a developing-world perspective, especially when it comes to cost, which for many people living on the margins is the ultimate optimizer. What might seem like a nuisance to someone of means is often a clever (and sometimes necessary) method of cutting down the cost of use, such as skirting text message charges by placing a call and hanging up before the person on the other end answers.

Designers, problem solvers by nature, are additionally bounded by the "solutions mode" mentality. Always wanting to make things better has its altruistic qualities, but it can also come off as arrogant when a designer fails to respect the solutions that already exist, particularly those that have evolved from within a community.

A local solution may be the best solution, but it's not always a workable one, especially when it comes to things that require a complex supply chain, such as mobile phones and cars that can't necessarily be designed and manufactured locally in every part of the world. But even the corporations that make those sorts of global products owe it to themselves to understand what "local" actually means in the locales where they distribute their wares. The consequences of not understanding are very real. Contrary to what some humanitarian-minded thinkers are inclined to believe, it's the corporations, not the citizens of the developing world, who stand to lose more from their ignorance.

The Real Imperialism

It doesn't take much effort to find something about globalization to be incensed about: Starbucks pricing your favorite coffee shop out of the neighborhood; riots in Indonesia triggered by the Asian financial crisis; Apple imposing its corporate values by restricting the worldwide availability of adult content on their application platform; Coke and Pepsi logos being painted onto remote, pristine mountain ranges.

Or perhaps you prefer to take the profit-at-any-cost argument to the next level: Nestlé's aggressive sale of milk powder in

markets where doing so is likely to inhibit the lactation of mothers; Facebook and Google endlessly redefining privacy in their race to monetize your personal information through new services; Monsanto's development of sterile seeds to force farmers to make repeat purchases every year; the very prominent suicide rate at Foxconn factories in China; Ericsson profiteering from the sale of monitoring equipment in countries like Iran; and accusations of racism in the advertising of Unilever's Fair & Lovely Skin Whitening creams. Make no mistake—governments, corporations, organizations, and agencies need to be monitored, held to account, and, in many markets where certain players hold a disproportionate amount of power, kept in check.

But as consumers, employers, and employees, I/you/we/they are complicit in this relationship in the products we make and consume, in the lifestyles we aspire to, and in the moment-to-moment decisions we make in how the products we buy are used. Sure, we demand privacy, but we are willing to let personal ethics slide when a photo opportunity presents itself. We have grown accustomed to free email but (momentarily) rally against our email being read by an algorithm so that Google can serve us more contextualized advertising. We roll up to a remote mountain village and mutter expletives when a ringtone goes off, but get the jitters at the mere thought of giving up our own connectivity. We complain of global warming and then jet off to another conference that espouses, among other things, sustainable living. We are highly vocal about the price of new electronics, but vote with our wallets when it comes to disposing of them in a slightly more costly but environmentally less harmful manner.

Or, we fly halfway around the world to conduct business, but we don't track every source of income that enables that business, or the many different players in the global network that allows us to get there, stay there, and communicate with collaborators and loved ones during our stay.

I spend a fair amount of time speaking and giving talks around the world, everywhere from corporate conferences to grammar schools. I'm always grateful for the opportunity to share and learn from the intellect in the room. But on occasion I'm confronted with accusatory questions that suggest that my work, or any sort of corporate presence in the developing world, is an outright scourge. This line of questioning typically stems from passionate minds, but also from misconceptions about consumers in highly income- and resource-constrained (in other words, poor) communities. Often these distortions are born from good intentions, but too often they stem from a failure to see people as they are, rather than as observers would like them to be. The list looks something like this:

- Consumers living on very low levels of income are incapable of making rational or the "right" choices for themselves, and need to be protected from corporations trying to hoodwink them.

- These consumers are bound by duty to only make rational choices. (In this case "rational" refers to those things that have an immediate benefit to their current socioeconomic situation, as defined by the person making the argument. For example, that it's okay

to spend money on medicine for a sick kid, but not on electricity that allows that sick kid to watch TV.)

- Any time a consumer makes an "irrational" choice the "fault" lies with the company providing the products.

- Companies that target consumers in countries with very low levels of income are inherently evil.

When confronted by these sorts of arguments, I respond by pointing out that very-low-income consumers are—out of necessity, if nothing else—some of the world's most critical consumers. Only a small percentage of the world's population has the luxury of not having to think about every single thing they spend money on, the opportunity costs of buying one thing while forgoing others, and the social debts they might have to incur or collect in order to get by. Consumers with very low incomes are consistently pushed to make more rational choices than their wealthier counterparts because their day-to-day decision-making processes are more likely to revolve around how to carefully spend, and not misspend, their money. Like their wealthier counterparts, they also have inventive strategies for coping with limited and variable forms of income and credit, both formal and informal.

These sorts of tradeoffs are explored in the highly influential book *Portfolios of the Poor: How the World's Poor Live on $2 a Day*, wherein the authors document the financial life of a Bangladeshi couple named Hamid and Khadeja, who support themselves and their child on the roughly $70 a month Hamid earned

as a reserve driver of a motorized rickshaw. At the close of the year in which the authors followed Hamid and Khadeja, the couple had the following balance sheet:

Hamid and Khadeja's Closing Balance Sheet, November 2000

Financial assets	*$174.80*	*Financial liabilities*	*$223.34*
Microfinance savings account	16.80	Microfinance loan account	153.34
Savings with a moneyguard	8.00	Private interest-free loan	14.00
Wage advance	10.00		
Home savings	2.00	Savings held for others	20.00
Life insurance	76.00	Shopkeeper credit	16.00
Remittances to the home village	>30.00	Rent arrears	10.00
Loans out	40.00		
Cash in hand	2.00		
		Financial net worth	−$48.54

Note: U.S.$ converted from Bangladeshi takas at $1 = 50 takas, market rate.

There are assets totaling $174.80, including $16.80 in a microfinance savings account, $8 in savings with a "moneyguard" (someone holding cash for safekeeping, in this case Hamid's employer), $2 in savings at home in case of day-to-day shortfalls, $76 in a life insurance savings policy, $30 in remittances to their home village, $40 loaned to a relative, and $2 cash in hand; and liabilities totaling $223.34, including a $153.34 microfinance loan, $14 in private interest-free loans from family, neighbors,

and Hamid's neighbor, $20 that the couple money guarded for two neighbors who wanted to "keep their money safe from their more spendthrift husbands and sons," $16 in credit from a shopkeeper, and $10 in rent arrears. On top of that, there are the small quantities of rice, lentils, and salt that Khadeja either borrowed or lent in a crude kitchen she shared with seven other wives, an informal balance sheet that she and those women kept in their heads for the sake of long-term fairness. Every one of those debits and credits had some strategic and material value for the couple, and although their net worth was negative, their debt service was quite manageable. Likewise, critics making the poor-must-behave-rationally argument seem to privilege formal education and literacy over intelligence and street smarts and decisions made from pure self-interest over decisions based on social status and social connections. It turns out that rational is a local phenomenon.

Is it irrational to save three months' salary and on occasion go without food to be able to afford a basic Nokia-branded mobile phone? What if it's used to enable a business? Or play games? Or chat with loved ones? Or browse porn? Is spending one month's salary on a cheaper no-brand device any more rational? Just how rational is your purchase of your iPhone? That pair of Nike sneakers? Those red high heels? Who gets to define what is and isn't rational? What was the opportunity cost of your last large purchase? What is the tradeoff for you between buying your brand-name phone versus one from an unknown manufacturer? And who gets to decide what the viable opportunity costs are? Or to loop it around to the creative community—are low-income consumers obligated to choose spartan functionality

over aesthetics and more superficial elements? And to loop once more, are companies obligated to make products for these markets aesthetically displeasing? Because that's where this argument is heading.

In a country where lighter skin is commonly associated with not having to work in the field, and where people aspire to work in white-collar jobs, is it rational to want to lighten your skin? And if for some consumers the answer is yes, what are the local options for doing so? How safe, reliable, and effective are they? If a multinational company aggressively markets its products by appealing to people's aspiration to have lighter skin, does it inherently make them racist? What if a local company does the same thing? What if a local company does the same thing, but makes even more outlandish claims? Most of us come to realize that these questions are far more complex than the critics would allow. The real issue: How do you find a way to listen and talk to people on the ground, whose agenda you can begin to understand, before reaching a conclusion? What do you need to do to move beyond headlines and trending topics?

Some companies, as profit-driven entities, will exploit the communities in which they work when given the opportunity, putting financial gain before everything else—just as there are countries in which government oversight is minimal and where lobbyists hold sway. But to assume that every company is that way is putting passion before logic. My assumption is that, driven by necessity and constraints, these are the most critical consumers on the planet. To create a commercially viable product or service that can meet their needs at a price point they are willing to pay is quite simply a remarkable achievement, espe-

cially considering how nuanced local alternatives can be. Our judgment of whether those products or services are rational choices for those consumers is largely irrelevant—as irrelevant as your purchasing decisions are to them.

Understanding what drives people, users, constituents, and consumers is the first step in creating meaningful products and services and eventually creating a sustainable business, whether you do that through a formal research process, more guerrilla techniques, or simply by reflecting on your own experiences. That a single financially constrained consumer gives up some of his or her very limited income to purchase that product is quite possibly the highest accolade.

The poor can least afford to purchase poorly designed products and services, and they can least afford to invest in those that fail to deliver, but they also have the right to decide what does and does not suit their own needs. The real arrogance comes from those people who assume that the world's poor are not worthy of their attention.