

## Lessons of Amish Hackers

In any discussion about the merits of avoiding the addictive grip of technology, the Amish stand out as offering an honorable alternative. The Amish have the reputation of being Luddites, people who refuse to employ faddish new technology. It's well known that the strictest of them don't use electricity or automobiles, but rather farm with manual tools and drive a horse and buggy. They favor technology they can either build or repair themselves, and they are, on the whole, thrifty and relatively self-reliant. They work outside in the fresh air with their hands, which endears them to the average Dilbert working inside at a computer screen in a cubicle. Plus, their minimal lifestyle is prospering (Amish population grows at 4 percent annually) while middle-class white-collar and factory workers are increasingly unemployed and withering.

The Unabomber was not Amish, and the Amish are no collapsitarians. They have created a civilization of sorts that seems to offer valuable lessons on how to balance the blessings and ills of technology.

Yet Amish lives are anything but antitechnological. In fact, on my several visits with them, I have found them to be ingenious hackers and tinkerers, the ultimate makers and do-it-yourselfers. They are often, surprisingly, protechnology.

First, a few caveats. The Amish are not a monolithic group. Their practices vary parish by parish. What one group does in Ohio another church in New York may not do or a parish in Iowa may do more so. Also, their relationship to technology is uneven. Most Amish use a mix-

ture of old and very new stuff, like the rest of us. It's important to note that Amish practices are ultimately driven by religious belief: The technological consequences are secondary. They often don't have logical reasons for their policies. Last, Amish practices change over time and are, at this moment, adapting to the world by embracing new technologies at their own rate. In many ways the view of the Amish as old-fashioned Luddites is an urban myth.

Like all legends, the Amish myth is based on some facts. The Amish, particularly the Old Order Amish—the stereotypical Amish on postcards—really *are* reluctant to adopt new things. In contemporary society our default is set to say yes to new things, and in Old Order Amish communities the default is set to “not yet.” When new things come around, the Old Order Amish automatically react by ignoring them. Thus, many Old Order Amish never said yes when automobiles were new. Instead, they travel around in a buggy hauled by a horse, as they always have. Some orders require the buggy to be an open carriage (so riders—teenagers, say—are not tempted by a private place to fool around); others will permit closed carriages. Some orders allow tractors on the farm, if the tractors have steel wheels; that way a tractor can't be “cheated” to drive on the road like a car. Some groups allow farmers to power their combines or threshers with diesel engines, as long as the engine only spins the threshers and does not propel the vehicle—which means the whole smoking, noisy contraption is pulled by horses. Some sects allow cars, but only if they are painted entirely black (no chrome) to ease the temptation to upgrade to the latest model.

Behind all of these variations is the Amish motivation to strengthen their communities. When cars first appeared at the turn of the last century, the Amish noticed that drivers would leave the community to go picnicking or sightseeing in other towns, instead of visiting family or the sick on Sundays or patronizing local shops on Saturday. Therefore, the ban on unbridled mobility was intended to make it hard to travel far and to keep energy focused in the local community. Some parishes did this with more strictness than others.

A similar communal motivation lies behind the Old Order Amish practice of living without electricity. The Amish noticed that when their

homes were electrified with wires from a generator in town, they became more tied to the rhythms, policies, and concerns of the town. Amish religious belief is founded on the principle that they should remain “in the world, not of it” and so should remain separate in as many ways as possible. Being tied to electricity tied them into the world, so they forfeited electrical benefits in order to stay outside the world. Visiting many Amish households even today, you’ll see no power lines weaving toward their homes. They live off the grid. To live without electricity or cars eliminates most of what we expect from modernity. No electricity means no internet, TV, or phones, either, so suddenly the Amish life stands in stark contrast to our complex modern lives.

But when you visit an Amish farm, that simplicity vanishes. Indeed, the simplicity vanishes even before you get to the farm. Cruising down the road you may see an Amish kid in a straw hat and suspenders zipping by on Rollerblades. In front of one schoolhouse I spied a flock of parked push-scooters, which is how the kids had arrived there. But on the same street a constant stream of grimy minivans paraded past the school. Each was packed with full-bearded Amish men sitting in the back. What was that about?

Turns out the Amish make a distinction between using something and owning it. The Old Order won’t own a pickup truck, but they will ride in one. They won’t get a license, purchase an automobile, pay insurance, and become dependent on the automobile and the industrial-car complex, but they will call a taxi. Since there are more Amish men than farms, many men work at small factories, and these guys will hire vans driven by outsiders to take them to and from work. So even the horse-and-buggy folk will use cars—on their own terms. (Very thrifty, too.)

The Amish also make a distinction between technology they have at work and technology they have at home. I remember an early visit to an Amish man who ran a woodworking shop near Lancaster, Pennsylvania. Let’s call him Amos, although Amos was not his real name: The Amish prefer not to call attention to themselves, thus their reluctance to be photographed or have their names in the press. I followed Amos into a grubby concrete building. Most of the interior was dimly lit naturally from windows, but hanging over the wooden meeting table in a

very cluttered room was a single electrical lightbulb. The host saw me staring at it, and when I looked at him, he just shrugged and said that it was for the benefit of visitors like me.

While the rest of his large workshop lacked electricity beyond that naked bulb, it did not lack power machines. The place was vibrating with an ear-cracking racket of power sanders, power saws, power planers, power drills, and so on. Everywhere I turned there were bearded men covered in sawdust pushing wood through screaming machines. This was not a circle of Renaissance craftsman hand-tooling masterpieces. This was a small-time factory cranking out wooden furniture with machine power. But where was the power coming from? Not from windmills.

Amos took me around to the back where a huge SUV-sized diesel generator sat. It was massive. In addition to a gas engine there was a very large tank, which, I learned, stored compressed air. The diesel engine burned petroleum fuel to drive the compressor that filled the reservoir with pressure. From the tank, a series of high-pressure pipes snaked off toward every corner of the factory. A hard rubber flexible hose connected each tool to a pipe. The entire shop ran on compressed air. Every piece of machinery was running on pneumatic power. Amos even showed me a pneumatic switch, which he could flick like a light switch to turn on some paint-drying fans running on air.

The Amish call this pneumatic system “Amish electricity.” At first, pneumatics were devised for Amish workshops, but air power was seen as so useful that it migrated to Amish households. In fact, there is an entire cottage industry in retrofitting tools and appliances to run on Amish electricity. The retrofitters buy a heavy-duty blender, say, and yank out the electrical motor. They then substitute an air-powered motor of appropriate size, add pneumatic connectors, and bingo, your Amish mom now has a blender in her electricity-less kitchen. You can get a pneumatic sewing machine and a pneumatic washer/dryer (with propane heat). In a display of pure steam-punk (air-punk?) nerdiness, Amish hackers try to outdo one another in building pneumatic versions of electrified contraptions. Their mechanical skill is quite impressive, particularly since none went to school beyond the eighth grade. They

love to show off their geekiest hacks. And every tinkerer I met claimed that pneumatics were superior to electrical devices because air was more powerful and durable, outlasting motors that burned out after a few years of hard labor. I don't know if this claim of superiority is true or merely a justification, but it was a constant refrain.

I visited one retrofitted workshop run by a strict Mennonite. Marlin was a short, beardless man (no beards for the Mennonites). He used a horse and buggy and had no phone, but electricity ran in the shop behind his home. They used electricity to make pneumatic parts. As was the case in most of his community, his kids worked alongside him. A few of his boys, in Plain Folk clothes, used a propane-powered forklift with metal wheels (no rubber so you can't drive it on the road) to cart around stacks of heavy metal as they manufactured very precise milled metal parts for pneumatic motors and for kerosene cooking stoves, an Amish favorite. The tolerances needed are a thousandth of an inch. So a few years ago they installed a \$400,000 computer-controlled milling machine in his backyard, behind the horse stable. This massive tool was about the size of a delivery truck. It was operated by Marlin's 14-year-old daughter, in a bonnet and long dress. With this computer-controlled machine she made parts for grid-free horse-and-buggy living.

I say "grid-free" rather than "electricity-free" because I kept finding electricity in Amish homes. Once you have a huge diesel generator running behind your barn to power the refrigeration units that store the milk (the main cash crop for the Amish), it's a small thing to stick on a small electrical generator. For recharging batteries, say. You can find battery-powered calculators, flashlights, and electric fences and generator-powered electric welders on Amish farms. The Amish also use batteries to run a radio or phone (outside in the barn or shop), or to power the required headlights and turn signals on their horse buggies. One clever Amish fellow spent a half hour explaining to me the ingenious way he had hacked up a mechanism to make a buggy turn signal automatically shut off when the turn was finished, just as it does in your car.

Nowadays solar panels are becoming popular among the Amish. With these they can get electricity without being tied to the grid, which

was their main worry. Solar is used primarily for utilitarian chores like pumping water, but it will slowly leak into the household. As do most innovations.

The Amish use disposable diapers (why not?), chemical fertilizers, and pesticides, and they are big boosters of genetically modified corn. In Europe this corn is called Frankenfood. I asked a few of the Amish elders about that last one. Why do they plant GMOs? Well, they reply, corn is susceptible to the corn borer, which nibbles away at the bottom of the stem and occasionally topples the stalk. Modern 500-horsepower harvesters don't notice this fall; they just suck up all the material and spit out the corn into a bin. The Amish harvest their corn semimanually. It's cut by a chopper device and then pitched into a thresher. But if there are a lot of stalks that are broken, they have to be pitched by hand. That is a lot of very hard, sweaty work. So they plant Bt corn. This genetic mutant carries the genes of the corn borer's enemy, *Bacillus thuringiensis*, which produces a toxin deadly to the corn borer. Fewer stalks are broken and the harvest can be aided with machines, so yields are up. One elder Amish man whose sons run his farm said he was too old to be pitching heavy, broken cornstalks, and he told his sons that he'd only help them with the harvest if they planted Bt corn. The alternative was to purchase expensive, modern harvesting equipment, which none of them wanted. So the technology of genetically modified crops allowed the Amish to continue using old, well-proven, debt-free equipment, which accomplished their main goal of keeping the family farm together. They did not use these words, but they made it clear that they considered genetically modified crops appropriate technology for family farms.

Artificial insemination, solar power, and the web are technologies that Amish are still debating. They use the web at libraries (using but not owning). In fact, from cubicles in public libraries Amish sometimes set up a website for their business. So while an "Amish website" sounds like the punch line to a joke, there are actually quite a few of them. What about postmodern innovations like credit cards? A few Amish did get them, presumably for their businesses at first. But over time local Amish bishops noticed problems of overspending and the resultant crippling

interest rates. Farmers got into debt, which impacted not only them but also their community, since their families had to help them recover (that's what community and families are for). So after a trial period, the elders ruled against credit cards.

One Amish man told me that the problem with phones, pagers, BlackBerrys, and iPhones (yes, he knew about them) was that "you got messages rather than conversations." That's about as accurate a summary of our times as any. Henry, his long white beard contrasting with his young bright eyes, told me, "If I had a TV, I'd watch it." What could be simpler?

No looming decision is riveting the Amish themselves as much as the question of whether they should accept cell phones. Previously, the Amish would build a shanty at the end of their driveway that housed an answering machine and phone to be shared by neighbors. The shanty sheltered the caller from rain and cold and kept the grid away from the house, and the long walk outside reduced phone use to essential calls rather than gossip and chatting. Cell phones are a new twist. You get a phone without wires, off the grid. As one Amish guy told me, "What is the difference if I stand in my phone booth with a wireless phone or stand outside with a cell phone? There's no difference." Further, cell phones have been embraced by women, who can keep in touch with their far-flung families, since they don't drive. And the bishops have noticed that the cell phone is so small it can be kept hidden, which is a concern for a people dedicated to discouraging individualism. The Amish have still not decided on the cell phone. Or perhaps it is more accurate to say they have decided "maybe."

For people who live off the grid, without TV, internet, or books beyond one Bible, the Amish are perplexingly well informed. There's not much I could tell them that they didn't know about and already have an opinion on. And surprisingly, there's not much new that at least one person in their church has not tried to use. In fact, the Amish rely on the enthusiasm of those early adopters to try stuff out until it proves harmful.

The typical adoption pattern for a new technology goes like this: Ivan is an Amish alpha geek. He is always the first to try a new gadget or

technique. He gets in his head that the new flowbitzmodulator would be really useful. He comes up with a justification of how it fits into the Amish orientation. So he goes to his bishop with this proposal: "I'd like to try this out." The bishop says to Ivan, "Okay, Ivan, do whatever you want with this. But you have to be ready to give it up if we decide it is not helping you or is hurting others." So Ivan acquires the tech and ramps it up, while his neighbors, family, and bishops watch intently. They weigh the benefits and drawbacks. What is it doing to the community? To Ivan? Cell-phone use among the Amish began that way. According to anecdote, the first Amish alpha geeks to request permission to use cell phones were two ministers who were also contractors. The bishops were reluctant to give permission but suggested a compromise: Keep the cell phones in the vans of the drivers. The van would be a mobile phone shanty. Then the community would watch the contractors. It seemed to work, so other early adopters picked it up. But still, at any time, even years later, the bishops can say no.

I visited a shop that built the Amish's famous buggies. From the outside, the carts look simple and old-fashioned. But when I inspected the process in the shop, I could see that they are quite high-tech and surprisingly complicated rigs. Made of lightweight fiberglass, they are hand cast and outfitted with stainless steel hardware and cool LED lights. The owner's teenage son, David, also worked at the shop. Like a lot of Amish, who work alongside their parents from an early age, he was incredibly poised and mature. I asked him what he thought the Amish would do about cell phones. He snuck his hand into his overalls and pulled one out. "They'll probably accept them," he said and smiled. He then quickly added that he worked for the local volunteer fire department, which was why he had one. (Sure!) But, his dad chimed in, if cell phones are accepted, "there won't be wires running down the street to our homes."

In pursuit of their goal to remain off the grid yet modernize, some Amish have installed inverters on their diesel generators linked to batteries to provide them with 110 off-grid volts. They power specialty appliances at first, such as an electric coffeepot. I saw one home with an electric copier in the home office part of the living room. Will the slow



acceptance of modern appliances creep along until, 100 years hence, the Amish have what we have now (but will by then have left behind)? What about cars? Will the Old Order ever drive old-fashioned internal combustion clunkers, say, when the rest of the world is using personal jet packs? Or will they embrace electric cars? I asked David, the 18-year-old Amish, what he expects to use in the future. Much to my surprise, he had a ready teenage answer. “If the bishops allow the church to leave behind buggies, I know exactly what I will get: a black Ford 460 V8.” That’s a 500-horsepower muscle car. Some Mennonite orders permit generic cars if they are black—no chrome or fanciness. So a black hot rod is okay! His dad, the carriage maker, again chimed in, “Even if that happens, there will always be some horse-and-carriage Amish.”

David then admitted, “When I was deciding whether to join the church or not, I thought of my future children and whether they would be brought up without restrictions. I could not imagine it.” A common phrase among the Amish is “holding the line.” They all recognize the line keeps moving, but a line must remain.

The book *Living Without Electricity* charts out how many years later the Amish adopt a technology after it has been adopted by the rest of America. My impression is that the Amish are living about 50 years behind us. Half of the inventions they use now were invented within the last 100 years. They don’t adopt everything new, but when they do embrace it, it’s half a century after everyone else does. By that time, the benefits and costs are clear, the technology stable, and it is cheap. The Amish are steadily adopting technology—at their pace. They are slow geeks. As one Amish man said, “We don’t want to stop progress, we just want to slow it down.” But their manner of slow adoption is instructive:

1. They are selective. They know how to say no and are not afraid to refuse new things. They ignore more than they adopt.
2. They evaluate new things by experience instead of by theory. They let the early adopters get their jollies by pioneering new stuff under watchful eyes.

3. They have criteria by which to make choices: Technologies must enhance family and community and distance themselves from the outside world.
4. The choices are not individual but communal. The community shapes and enforces technological direction.

This method works for the Amish, but can it work for the rest of us? I don't know. It has not really been tried yet anywhere else. And if the Amish hackers and early adopters teach us anything, it's that you have to try things first. Their motto is "try first and relinquish later, if need be." We are good at trying first, not good at relinquishing. To fulfill the Amish model we'd have to get better at relinquishing as a group—which is very difficult for a pluralistic society. Social relinquishing relies on mutual support. I have not seen any evidence of that happening outside of Amish communities, but it would be a telling sign if it did appear.

The Amish have become very good at managing technologies. But what do they gain by this discipline? Are their lives really any better for this effort? We can see what they give up, but have they earned anything we would want?

Recently an Amish guy rode his bicycle out to our home along the foggy coast of the Pacific, and I had a chance to ask this question in depth. He appeared at our door sweaty and out of breath from the long uphill climb to our house under the redwoods. Parked a few feet away was his ingenious Dahon fold-up bike, which he had pedaled from the train station. Like most Amish, he did not fly, so he had stored his bike on the three-day cross-country train ride from Pennsylvania. This was not his first trip to San Francisco. He had previously ridden his bike along the entire coast of California and had in fact seen a lot of the world by train, bike, and boat.

For the next week, our Amish visitor couch-surfed in our spare bedroom, and at dinner he regaled us with tales of his life growing up in a horse-and-buggy, Old Order, Plain Folk community. I'll call our friend Leon. He is an unusual Amish in many ways. I met Leon online. Online, is of course, the last place you'd ever expect to meet an Amish man. But Leon had read some things I had posted about the Amish on my website

and wrote to me. While he never went to high school (Amish formal education ceases after eighth grade) he is among the few Plain Folk to go to college, where he is currently an older student. (He is in his 30s.) He hopes to study medicine and perhaps become the first Amish doctor. Many former Amish have gone on to college or become doctors, but none have done that while remaining in the Old Order church. Leon is unusual in that he is a Plain Folk church member yet relishes his ability to live in the “outside” world as well.

The Amish practice a remarkable tradition called *rumspringa*, wherein their teenagers are allowed to ditch their homemade uniforms—suspenders and hats for boys, long dresses and bonnets for girls—and don baggy pants and short skirts, buy a car, listen to music, and party for a few years before they decide to forever give up these modern amenities and join the Old Order church. This intimate, real exposure to the technological universe means that they are fully cognizant of what that world has to offer and what exactly they are denying themselves. Leon is on a sort of permanent *rumspringa*—although he doesn’t party but works very hard. His father runs a machine shop (a common Amish occupation), so Leon is a genius with tools. I was in the middle of a bathroom plumbing job on the afternoon when Leon first showed up, and he quickly took over the chore. I was impressed by his complete mastery of hardware store parts. I’ve heard of Amish auto mechanics who don’t drive cars but can fix any model you bring them.

As Leon spoke of what his boyhood was like with only a horse and buggy for transportation, and what he learned in his multigrade, one-room schoolhouse, a fervent wistfulness played over his face. He missed the comfort of Old Order life now that he was away from it. We outsiders think of life without electricity, central heat, or cars as hard punishment. But curiously, Amish life offers more leisure than contemporary urbanity does. In Leon’s account, they always had time for a game of baseball, reading, visiting neighbors, and hobbies.

Many observers of the Amish have remarked on how hardworking they are. So it was a complete surprise to someone like Eric Brende, an MIT grad student who gave up an engineering degree and instead dropped out to live alongside an Old Order Amish/Mennonite com-

munity, to find out how much leisure this lifestyle generated. Brende, who is not Amish, eliminated as much gear as he could from his home with his wife and tried to live as Plain as possible, a tale he recounts in his book, *Better Off*. For over two years Brende gradually adopted what he calls a minimite lifestyle. A minimite uses “the least amount of technology needed to accomplish something.” Like his Old Order Amish/Mennonite neighbors, he employed a minimum of technology: no power tools or electric appliances. Brende found that the absence of electronic entertainment, of long auto commutes, and of chores aimed at simply maintaining existing complex technology resulted in more time of real leisure. In fact, the constraints of cutting wood by hand, hauling manure with horses, and doing dishes by lamplight liberated the first genuine leisure time he had ever had. At the same time, the hard, strenuous manual work was satisfying and rewarding. He told me he found not only more leisure but more fulfillment as well.

Wendell Berry is a thinker and farmer who works his farm in an old-fashioned way using horses instead of tractors, very much like the Amish. Like Eric Brende, Berry finds tremendous satisfaction in the visible arrangement of bodily labor and agricultural results. Berry is a master wordsmith as well, and no one has been able to convey the “gift” that minimalism can deliver as well as he. One particular story from his collection *The Gift of Good Land* captures the almost ecstatic sense of fulfillment won with minimal technology.

Last summer we put up our second cutting of alfalfa on an extremely hot, humid afternoon. . . . There was no breeze at all. The hot, bright, moist air seemed to wrap around us and stick to us while we loaded the wagons. It was worse in the barn, where the tin roof raised the temperature and held the air even closer and stiller. We worked more quietly than we usually do, not having breath for talk. It was miserable, no doubt about it. And there was not a push button anywhere in reach.

But we stayed there and did the work, were even glad to do it, and experienced no futurological fits. When we were

done we told stories and laughed and talked a long time, sitting on a post pile in the shade of a big elm. It was a pleasing day.

Why was it pleasing? Nobody will ever figure that out by a “logical projection.” The matter is too complex and too profound for logic. It was pleasing, for one thing, because we got done. That does not make logic, but it makes sense. For another thing, it was good hay, and we got it up in good shape. For another, we like each other and we work together because we want to.

And so, six months after we shed all that sweat, there comes a bitter cold January evening when I go up to the horse barn to feed. It is nearly nightfall, and snowing hard. The north wind is driving the snow through the cracks in the barn wall. I bed the stalls, put corn in the troughs, climb into the loft and drop the rations of fragrant hay into the mangers. I go to the back door and open it; the horses come in and file along the driveway to their stalls, the snow piled white on their backs. The barn fills with the sounds of their eating. It is time to go home. I have my comfort ahead of me: talk, supper, fire in the stove, something to read. But I know too that all my animals are well fed and comfortable, and my comfort is enlarged in theirs. . . . And when I go out and shut the door, I am satisfied.

Our Amish friend Leon spoke of the same equation: fewer distractions, more satisfaction. The ever-ready embrace of his community was palpable. Imagine it: Neighbors would pay your medical bill if needed, or build your house in a few weeks without pay, and, more important, allow you to do the same for them. Minimal technology, unburdened by cultural innovations such as insurance or credit cards, forces a daily reliance on neighbors and friends. Hospital stays are paid by church members, who also visit the sick regularly. Barns destroyed by fire or storm are rebuilt in a barn raising and not by insurance money. Financial, marital, and behavioral counseling are done by peers. The com-

munity is as self-reliant as it can make itself and only as self-reliant as it is because it is a community. I began to understand the strong attraction the Amish lifestyle exerts on its young adults and why, even today, only a very few leave after their *rumspringa*. Leon observed that of the 300 or so friends his age in his church, only 2 or 3 have abandoned this very technologically constrained life, and they joined a church slightly less strict but still not mainstream.

But the cost of this closeness and dependency is limited choice. No education beyond eighth grade. Few career options for guys, none besides homemaker for girls. For the Amish and minimites, one's fulfillment must blossom inside the traditional confines of a farmer, tradesman, or housewife. But not everyone is born to be a farmer. Not every human is ideally matched to the rhythms of horse and corn and seasons and the eternal close inspection of village conformity. Where in the Amish scheme of things is the support for a mathematical genius or a person who might spend all day composing new music?

I asked Leon whether all the goodness of the Amish life—all that comforting mutual aid, satisfying hands-on work, reliable community infrastructure—could still issue forth if, say, all kids attended school up to 10th grade instead of eighth, as they now do? Just for starters. Well, you know, he said, “hormones kick in around the ninth grade, and boys, and even some girls, just don't want to sit at desks and do paperwork. They need to use their hands as well as their heads, and they ache to be useful. Kids learn more doing real things at that age.” Fair enough. When I was a teen I wished I had been “doing real stuff” instead of being holed up in a stuffy high-school classroom.

The Amish are a little sensitive about this, but their self-reliant lifestyle as it is currently practiced is heavily dependent on the greater technium that surrounds their enclaves. They do not mine the metal they build their mowers from. They do not drill or process the kerosene they use. They don't manufacture the solar panels on their roofs. They don't grow or weave the cotton in their clothes. They don't educate or train their own doctors. They also famously do not enroll in armed forces of any kind. (But in compensation for that, the Amish are world-class volunteers in the outside world. Few people volunteer more often, or with

more expertise and passion, than the Amish/Mennonites. They travel by bus or boat to distant lands to build homes and schools for the needy.) If the Amish had to generate all their own energy, grow all their clothing fibers, mine all metal, harvest and mill all lumber, they would not be Amish at all because they would be running large machines, dangerous factories, and other types of industry that would not sit well in their backyards (one of the criteria they use to decide whether a craft is appropriate for them). But without someone manufacturing this stuff, they could not maintain their lifestyle or prosperity. In short, the Amish depend on the outside world for the way they currently live. Their choice of minimal technology adoption is a choice—but a choice enabled by the technium. Their lifestyle is within the technium, not outside it.

For a long time I had been perplexed as to why Amish-like dissenters were primarily found only in North America. (The related Mennonites have a few satellite settlements in South America.) I looked long and hard to find Japanese “Amish,” Chinese Amish, Indian Amish, even Islamic Amish but discovered none. I found some ultraorthodox Jews in Israel who reject computers, and likewise one or two small Islamic sects that prohibit TV and internet and some Jain monks in India who refuse to ride in automobiles or trains. As far as I can tell, there are no other ongoing large-scale communities based outside North America that have built a lifestyle around minimal technology. That’s because outside technological America the idea seems crazy. This opt-out option makes sense only when there is something to opt out of. The original Amish protesters (or Protestants) were indistinguishable from neighboring European peasants. Fiercely persecuted by the state church, the Amish maintained their separation from the “worldly” mainstream by not upgrading their technology. No longer persecuted, the Amish today are a counterpoint to the incredibly technological aspect of American society. Their alternative thrives in opposition to the unrelenting thrust of individual personal reinvention and progress that is the hallmark of America. The Amish lifestyle is too familiar to poor peasants in China or India to have any meaning there. Such elegant rejection can only exist in, and because of, a modern technium.

The overabundance of the technium in North America has sprouted

other dropouts as well. In the late 1960s and early 1970s tens of thousands of self-described hippies stampeded to small farms and makeshift communes to live simply, not too differently from the Amish. I was part of that movement. Wendell Berry was one of the clear-thinking gurus we listened to. In small experiments in rural America, we jettisoned the technology of the modern world (because it seemed to crush individualism) and tried to rebuild a new world while digging wells by hand, grinding our own flour, keeping bees, erecting homes from sun-dried clay, and even getting windmills and water generators to occasionally work. Some found religion, too. Our discoveries paralleled what the Amish knew—that this simplicity worked best in community, that the solution wasn't no technology but some technology, and that what seem to work best were the low-tech solutions we called "appropriate technology." This tie-dyed, deliberate, conscious engagement with appropriate technology was deeply satisfying for a while.

But only for a while. The *Whole Earth Catalog*, which I edited at one point, was the field manual for those millions of simple technology experiments. We ran pages and pages of information on how to build chicken coops, grow your own veggies, curdle your own cheese, school your children, and start a home business in a house made from bales of straw. And so I got to witness close up how the early enthusiasm for restricted technology would inevitably give way to unease and restlessness. Slowly the hippies drifted away from their deliberately low-tech world. One by one they left their domes for suburban garages and lofts where, much to our collective astonishment, many of them transformed their small-is-beautiful skills into small-is-start-up entrepreneurship. The origins of the *Wired* generation and the long-hair computer culture (think open-source UNIX) lay in the counterculture dropouts of the 70s. As Stewart Brand, hippie founder of the *Whole Earth Catalog*, remembers, "Do your own thing" easily translated into "Start your own business." I've lost count of the hundreds of individuals I personally know who left communes to eventually start high-tech companies in Silicon Valley. It's almost a cliché by now—barefoot to billionaire, just like Steve Jobs.

The hippies of the previous generation did not remain in their



Amish-like mode because as satisfying and attractive as the work in those communities was, the siren call of choices was more attractive. The hippies left the farm for the same reason the young have always left: The possibilities leveraged by technology beckon all night and day. In retrospect we might say the hippies left for the same reason Thoreau left his Walden; they both came and left to experience life to its fullest. Voluntary simplicity is a possibility, an option, a choice that one should experience for at least part of one's life. I highly recommend elective poverty and minimalism as a fantastic education, not least because it will help you sort out your technology priorities. But I have observed that simplicity's fullest potential requires that one consider minimalism one phase of many (even if a recurring phase, as is meditation or the Sabbath). In the past decade, a new generation of minimites has arisen, and they are now urban homesteading—living lightly in cities, supported by ad hoc communities of like-minded homesteaders. They are trying to have both—the Amish satisfaction of intense mutual aid and hand labor and the ever-cascading choices of a city.

Because of my own personal journey from low tech to high choice, I admire Leon and Berry and Brende and the Old Order Plain Folk communities. I am convinced that the Amish and minimites are more content and satisfied as people than the rest of us fast-forward urban technophiles. In their deliberate constraint of technology they have figured out how to optimize an alluring combination of leisure, comfort, and certainty over the optimization of uncertain possibilities. The honest truth is that as the technium explodes with new self-made options, we find it harder to find fulfillment. How can we be fulfilled when we don't know what is being filled?

So why not steer everyone in this direction? Why don't we all give up more choices and become Amish? After all, Wendell Berry and the Amish see our multimillion choices as illusory and meaningless, or as choices that are really entrapments.

I believe these two different routes for technological lifestyle—either optimizing contentment or optimizing choices—come down to very different ideas of what humans are to be.

It is only possible to optimize human satisfaction if you believe

human nature is fixed. Needs cannot be maximally satisfied if they are in flux. Minimal technologists maintain that human nature is unchanging. If they refer to evolution at all, they claim that millions of years surviving on the savannah shaped our social natures in such a way they are not easily satiated with new gizmos. Instead, our enduring souls crave timeless goods.

If the nature of humans is indeed invariant, then it is possible to achieve a peak technological solution to support it. For example, Wendell Berry believes that a solid cast-iron hand pump is far superior to hauling water in buckets on a yoke. And he says that domesticated horses are better than pulling a plow yourself, as many an ancient farmer before him has done. But for Berry, who uses horses to drive his farm gear, anything beyond the innovation of hand pump and horsepower works against the satisfaction of human nature and natural systems. When tractors were introduced in the 1940s, “the speed of work could be increased, but not the quality.” He writes:

Consider, for example, the International High Gear No. 9 mowing machine. This is a horse-drawn mower that certainly improved on everything that came before it, from the scythe to previous machines in the International line. . . . I own one of these mowers. I have used it in my hayfield at the same time that a neighbor mowed there with a tractor mower; I have gone from my own freshly cut hayfield into others just mowed by tractors; and I can say unhesitatingly that, though the tractors do faster work, they do not do it better. The same is substantially true, I think, of other tools: plows, cultivators, harrows, grain drills, seeders, spreaders, etc. . . . The coming of the tractor made it possible for a farmer to do more work, but not better.

For Berry, technology peaked in 1940, about the moment when all these farm implements were as good as they could get. In his eyes, and in those of the Amish, too, the elaborate circular solution of a small, mixed family farm, where the farmer produces plant feed for the ani-

mals, who produce manure (power and food to grow more plants), is the perfect pattern for the health and satisfaction of a human being, human society, and the environment. After thousands of years of tinkering, humans found a way to optimize human work and leisure. But now found, additional choices overshoot this peak and only make things worse.

I could be wrong, of course, but it seems pure foolishness, if not the height of conceit and hubris, to believe that in the long course of human history, and by that I mean the next 10,000 years in addition to the past 10,000 years, the peak of human invention and satisfaction should turn out to be 1940. It is no coincidence that this date also happens to be the time when Wendell Berry was a young boy growing up on a farm with horses. Berry seems to follow Alan Kay's definition of technology. Kay, a brilliant polymath who has worked at Atari, Xerox, Apple, and Disney, came up with as good a definition of technology as I've heard: "Technology," Kay says, "is anything that was invented after you were born." The year 1940 cannot be the end of technological perfection for human fulfillment simply because human nature is not at its end.

We have domesticated our humanity as much as we have domesticated our horses. Our human nature itself is a malleable crop that we planted 50,000 years ago and continue to garden even today. The field of our nature has never been static. We know that genetically our bodies are changing faster now than at any time in the past million years. Our minds are being rewired by our culture. With no exaggeration and no metaphor, we are not the same people who first started to plow 10,000 years ago. The snug interlocking system of horse and buggy, wood-fire cooking, compost gardening, and minimal industry may be perfectly fit for a human nature—of an ancient agrarian epoch. But this devotion to a traditional way of being ignores the way in which our nature—our wants, desires, fears, primeval instincts, and loftiest aspirations—is being recast by ourselves and by our inventions, and it excludes the needs of our new natures. We need new jobs in part because we are new people at our core.

We are different physical beings from our ancestors. We think dif-

ferently. Our educated and literate brains work differently. More than our hunter-gatherer ancestors, we are shaped by the accumulating wisdom, practices, traditions, and culture of all those who've lived before us and live with us. We are cramming our lives with ubiquitous messages, science, pervasive entertainment, travel, surplus food, abundant nutrition, and new possibilities every day. At the same time, our genes are racing to keep up with culture. And we are speeding the acceleration of those genes by several means, including medical interventions such as gene therapy. In fact, every trend of the technium—especially its increasing evolvability—points to a much more rapid change of human nature in the future.

Curiously, many of the same traditionalists who deny we are changing insist that we had better not.

I wish I had been an Amish boy in high school, making things, far from a classroom, sure of who I was. But reading books in high school opened up my mind to possibilities I had never imagined in grade school. My world began expanding in those years and has never stopped. Chief among those expanding possibilities were new ways to be human. Writing in 1950, sociologist David Riesman observed: "The more advanced the technology, on the whole, the more possible it is for a considerable number of human beings to imagine being somebody else." We expand technology to find out who we are and who we can be.

I know the Amish and Wendell Berry and Eric Brende and the minimites well enough to know that they believe we don't need exploding technology to expand ourselves. They are, after all, minimalists. The Amish find incredible contentment in their enactment of a fixed human nature. This deep human fulfillment is real, visceral, renewable, and so attractive that Amish numbers are doubling every generation. But I believe the Amish and minimites have traded contentment for revelation. They have not discovered, and cannot discover, who they can become.

That's their choice, which is fine as far as it goes. And because it is a choice, we should celebrate their development of it.

I may not tweet, watch TV, or use a laptop, but I certainly benefit

from the effect of others who do. In that way I am not that different from the Amish, who benefit from the outsiders around them fully engaged with electricity, phones, and cars. But unlike individuals who opt out of individual technologies, Amish society indirectly constrains others as well as themselves. If we apply the ubiquity test—what happens if everyone does it?—to the Amish way, the optimization of choice collapses. By constraining the suite of acceptable occupations and narrowing education, the Amish are holding back possibilities not just for their children but indirectly for all.

If you are a web designer today, it is only because many tens of thousands of other people around you and before you have been expanding the realm of possibilities. They have gone beyond farms and home shops to invent a complex ecology of electronic devices that require new expertise and new ways of thinking. If you are an accountant, untold numbers of creative people in the past devised the logic and tools of accounting for you. If you do science, your instruments and field of study have been created by others. If you are a photographer, or an extreme sports athlete, or a baker, or an auto mechanic, or a nurse—*then your potential has been given an opportunity by the work of others*. You are being expanded as others expand themselves.

Unlike the Amish and minimites, the tens of millions of migrants headed into cities each year may invent a tool that will unleash choices for someone else. If they don't, then their children will. Our mission as humans is not only to discover our fullest selves in the technium, and to find full contentment, but to expand the possibilities for others. Greater technology will selfishly unleash our talents, but it will also unselfishly unleash others: our children, and all children to come.

That means that as you embrace new technologies, you are indirectly working for future generations of Amish, and for the minimite homesteaders, even though they are not doing as much for you. Most of what you adopt they will ignore. But every once in a while your adoption of "something that doesn't quite work yet" (Danny Hillis's definition of technology) will evolve into an appropriate tool they can use. It might be a solar grain dyer; it might be a cure for cancer. Anyone who is in-

venting, discovering, and expanding possibilities will indirectly expand possibilities for others.

Nonetheless, the Amish and minimites have important lessons to teach us about selecting what we embrace. Like them, I don't want a lot of devices that add maintenance chores to my life without adding real benefits. I do want to be choosy about what I spend time mastering. I want to be able to back out of things that don't work out. I don't want stuff that closes off options for others (like lethal weapons). And I do want the minimum because I've learned that I have limited time and attention.

I owe the Amish hackers a large debt because through their lives I now see the technium's dilemma very clearly: To maximize our own contentment, we seek the minimum amount of technology in our lives. Yet to maximize the contentment of others, we must maximize the amount of technology in the world. Indeed, we can only find our own minimal tools if others have created a sufficient maximum pool of options we can choose from. The dilemma remains in how we can personally minimize stuff close to us while trying to expand it globally.