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## ***Part One***



# **LIFE**

*The universe is change; our life is what our thoughts make it.*

—Marcus Aurelius Antoninus (A.D. 121–180)

# 1

## Our Story Begins

*The sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that.*

—Thomas Edison to Henry Ford and Harvey Firestone (1931)

Important men have been arguing about global change since before I was born.

Almost ninety years ago, the guy who invented the light bulb urged renewable energy on the guy who invented the car and the guy who invented the tire. I imagine they nodded politely, finished their drinks, and went straight back to motorizing the planet. During the decades that followed, the Ford Motor Company manufactured and sold more than three hundred million motor vehicles that burned upward of ten billion barrels of oil and required a minimum of 1.2 billion tires, also partially made from oil.

But that's not all. Back in 1969, the Norwegian explorer Bernt Balchen noticed a thinning trend in the ice that covered the North Pole. He warned his colleagues that the Arctic Ocean was melting into an open sea and that this could change weather patterns such that farming would become impossible in North America ten to twenty years hence. *The New York Times* picked up the story, and Balchen was promptly shouted down by Walter Whittmann of the U.S. Navy, who had seen no evidence of thinning during his monthly airplane flights over the pole.

As is the case with most scientists most of the time, Balchen was both right *and* wrong in his claims. By 1999, the submarines that had been cruising the Arctic Ocean since the 1950s could clearly see that polar sea ice had thinned drastically during the twentieth century—thinned by almost half. Nevertheless, it's been fifty years since Balchen graced the pages of the *Times* and American agriculture has yet to feel the full effect of any melting. Which, technically, means that Whittmann was also both wrong and right.

We shouldn't be surprised when scientists are wrong. All human beings are a lot better at describing what is happening than at predicting what will happen. Somewhere along the way, however, we began to hope that scientists were different—that they could be right all the time. And because they're not, we kind of stopped listening. By now we're quite practiced at not listening to things scientists say over and over again.

I ask them: What will you do with the extra decade of life given to you, over and above your parents'? We, the 20 percent of the globe that uses most of its resources, must begin to detox from this consumption, or things will never get better. Look at your own life: Can you identify the most energy-intensive thing that you do? Are you willing to change? We will never change our institutions if we cannot change ourselves.

I stress one thing above all else: *Having hope requires courage*. It matters not only what we do about global change but how we talk about it, both in the classroom and beyond. We risk our own paralysis with the message that we have poisoned the earth and so the earth rejects us. As far as we know, this is still our species' eternal home, and we must not alienate our children from it. We must go forward and live within the world that we have made, while understanding that its current state arises from a relentless Story of More. We can make this easier by being kind to one another along the way.

I warn them: Do not be seduced by lazy nihilism. It is precisely because no single solution will save us that everything we do matters. Every meal we eat, every mile we travel, and every dollar we spend presents us with a choice between using more energy than we did last time or less. You have power. How will you use it?

Now is the time to imagine a world in alignment with our ideals, as we embark on our postindustrial age. We will need to feed and shelter ourselves and one another, but everything else is on the table. What can seven billion people do that three billion people could not? is the question of my life so far. We are troubled, we are imperfect, but we are many, and we are doomed only if we believe ourselves to be. Our history books contain so much—extravagance and deprivation, catastrophe and industry, triumph and defeat—but they don't yet include *us*. Out before us stretches a new century, and its story is still unwritten. As every author will tell you, there is nothing more thrilling, or as daunting, as the possibilities that burst from a blank page.

## I. The Action You Take

*It is in you that you must look, not around you.*

—Eugène Delacroix (b. 1798, d. 1863)

Now, after all you've read, I have one question for you: Do you want to live in a more equitable world with a brighter future?

If your answer is “Yes,” then we need to talk about the steps necessary to get there, bearing in mind that while Rome wasn't built in a day, it didn't burn down in a day, either. Take some time to think about your answer, and talk to those closest to you, for this will help make your actions stick.

*Step 1: Examine your values.*

A large number of issues have been raised in these nineteen chapters. Which ones resonate with your daily life, your greatest fears, your highest aspirations? Consider them all, then rank them accordingly. Where does world hunger fall on your list? Extinction of species? Weirding weather? Green energy? Pollution of our oceans? Animal rights? Public transportation? Beach erosion? Healthy school lunches? National parks? Organic farming? Arctic warming? Women's health? Some of these issues may be very important to you and others less compelling. Identify one issue to focus upon: the one that you are willing to sacrifice for.

*Step 2: Gather information.*

Go through your habits and possessions in order to take stock of how, as with most of us, your personal life is working against your values. How many miles do you drive? How often do you fly? Is any of it optional? How much of the water that goes down your drain is still drinkable? How much of the food that goes into your garbage is still edible? How much meat do you eat, and how often? Go through your closet and look at the tags: Where were your clothes made? How far did they travel to get to you? Go through your refrigerator: How many items came to you in a plastic container? How many of them contain added sugar, posing as “natural sweetener”; “corn syrup”; “cane sugar”; “cane syrup”; “maltodextrin”; “fruit juice concentrate”; “raw sugar”; “brown sugar”; “dextrose”; “glucose”; “HFCS”? Is nearby land being contested for development versus conservation? How is the electricity that comes into your house generated? Is constructing a “renewable energy” facility up for discussion within your county? Where does the gasoline you pump come from? Is any of it ethanol? Which of the meats that you consume concentrates the most grain? Which parts of your sushi were likely raised inside a



farm?

Step 3: *Can you make your personal activities consistent with your values?*

Pick out one change that you can make. Can you drive fewer miles? Carpool? Eliminate some of your plane trips? Use public transportation? Buy 40 percent less food (especially the items you notice finding their way to the garbage)? Avoid sugared foods? Eat fewer meals of meat each week? Reuse plastic objects more than twice? More than three times? Keep your thermostat lower during the winter and higher during the summer? Buy locally? Buy *less*? Give up *more*?

Be sure to keep a journal on how it goes; record the numbers and the outcomes. After you take these first three steps, you'll find yourself knowledgeable, experienced, humbled, and proud with respect to your values—all of these are necessary, though not sufficient, qualities for convincing others.

If you've made it this far, please know that I am very proud of you for many reasons, not the least of which is that now you are ready for the hard part.

When I was in high school, one Minnesota physician caused a scandal that reached even our small-town newspaper. A renowned transplant doctor—a surgeon who could swap out your liver or kidneys—was exposed as the owner of a Popeyes Famous Fried Chicken & Biscuits outlet.

"He gets you coming, and he gets you going," my mother wryly observed before turning the page.

To the reporter, the doctor had defended his investment on health grounds. "The important thing is to get away from beef and red meat," he lectured. "What we stress, as physicians, is chicken and fish." I had never been to a Popeyes (there wasn't one in our little town), but the journalist had also contacted a Harvard professor who assured readers that Popeyes food contained just as much saturated fat as the burgers from any of the big burger joints. Probably bad for your kidneys, he surmised, and definitely bad for your liver.

Hypocrisy and greed are not personal qualities that midwesterners admire, though the surgeon continued to practice. He may have been pilloried in the *Star Tribune*, but it's quite likely nobody ever said anything to his face. As of today, Popeyes is still in business and making more money than ever.

At the time of the scandal, I was staring down the barrel of four long years at university. As a surgeon, this doctor had studied for at least eight years, followed by several more years of twelve-hour days fading into countless night shifts as an intern and then a resident. If he had been motivated solely by a lust for money, I wondered, couldn't he have found some easier way to earn it that didn't involve twenty-odd years of torturous training?

What I really couldn't fathom was why he would invest in something that worked so directly *against* what he was trying to do every day at his job. Did he want people to have healthy livers or not? The hours of his life pledged yes, while

his acquired possessions screamed no.

Twenty years later, I found myself in almost the exact same situation.

In 2008, my lab published our chemical analyses of fast-food meals from McDonald's, Burger King, and Wendy's restaurants spanning the length of America, from Boston to Los Angeles. We were shocked to find that the meat in a sandwich purchased in Detroit had an identical isotope signature as the same sandwich purchased in Denver, or Cleveland, or San Francisco. Honestly, our results were consistent with the hypothesis that one single gargantuan chicken dwelled in captivity somewhere in Nebraska, and every time Wendy's sold a sandwich, a slice was taken from its massive breast.

Within our scientific publication, we attributed this extreme homogeneity to the industrially prescribed diet of farm animals and the confinement they endured before slaughter. Our paper didn't include the phrase "so stop eating that junk," but the overall picture it painted of the fast-food industry was less than savory.

We published our findings in a top journal, got some media attention, and I was feeling pretty good about myself. I personally hadn't eaten fast food since 2004, when, eight months pregnant, I demanded we go to a drive-through, wolfed down a double-cheesy-bacon whatever, and became overwhelmingly sick immediately afterward. My abstention of fast food since then had cleared my path to the pulpit, or so I thought.

Exactly one month after the 2004 Burger Incident, I was holding a beautiful baby and everyone around me was urging me to start saving—*investing*—against the End of the World, or baby's college, or whichever came first. We dutifully broke open our piggy bank and took the pennies out to buy stocks and bonds because, well, that's what one does. Four years later, upon publishing the study, I began to crow over my erudite takedown of Big Fast Food (is there any other kind?). My husband, Clint, looked puzzled and reminded me, "You know, we're probably invested in that."

#### Step 4: *Can you make your personal investments consistent with your values?*

The above events spurred a financial cleansing that continues within our family to this day. It takes time, as it's far from easy to figure out exactly what the hell you have invested in, thanks to index and mutual funds that effectively bundle stocks you would be proud to own with stocks that you would be mortified to be any part of. Picking individual stocks is also full of pitfalls. If you own "QSR," a nicely performing company bearing the nebulous moniker "Restaurant Brands International," you are actually invested in just three entities: Tim Hortons, Burger King, and—who knew?—Popeyes. If you own stock that finances activities that are directly orthogonal to what you are trying to accomplish with your life, consider pulling your money out. Are you an addiction counselor paying into a mutual fund that includes a tequila manufacturer? Are you advocating for low-

meat intake, or food waste, or car commuting, or airline travel, or pesticide use. Regardless of your mission, start in your own home and expand from there. I promise you'll be surprised at how far abroad it takes you.

The above may seem like an impossible task, but so did curing tuberculosis or putting a man on the moon or building the Great Wall across China or starting a new nation based on all men being equal or sailing across an unknown ocean in search of an unmapped land. History teaches us that these challenges were thoroughly overcome, via means honorable or shameful, despite the fact that they were originally deemed both ridiculous and impossible.

In most ways, we are just as noble and frail and flawed and ingenious as the people who cured and dared and built and forged centuries ago. Like them, we are ultimately endowed with only four resources: the earth, the ocean, the sky, and each other. If we can refrain from overestimating our likelihood of failure, then neither must we underestimate our capacity for success.