

6 Hacking Health

In September 2008 a small group of enthusiasts met in the San Francisco home of Kevin Kelly, former executive editor of *Wired* and *Cool Tools* wrangler. Kelly had gathered about thirty people interested in health, enhancement, genetics, and life extension. The group included Gary Wolf, a colleague from *Wired*, and Kelly and Wolf had organized this get-together as the inaugural meeting of what they called the “Quantified Self” (QS). This was the movement’s first Show & Tell for those interested in increasing “self knowledge through numbers”—the QS motto.

Kelly believes that QS can help answer questions both prosaic and transcendent. Through it, we might learn how to better manage our email or live to be a hundred years old. It might even answer the central question of the digital age: “What is a human?... Is human nature fixed? Sacred? Infinitely expandable?” Kelly is characteristically optimistic and tools-focused.

We believe that the answers to these cosmic questions will be found in the personal. Real change will happen in individuals as they work through self-knowledge. Self-knowledge of one’s body, mind and spirit. Many seek this self-knowledge and we embrace all paths to it. However the particular untrodden path we have chosen to explore here is a rational one: Unless something can be measured, it cannot be improved. So we are on a quest to collect as many personal tools that will assist us in quantifiable measurement of ourselves. We welcome tools that help us see and understand bodies and minds so that we can figure out what humans are here for.¹

The idea that self-knowledge and improvement need measurement is a variation on the idea that “if you can’t measure it, you can’t manage it.” This aphorism is often attributed to management consultant Peter Drucker, but his take was more nuanced. Although Drucker advocated measurement, he believed that a manager’s relationships were primary and “cannot be

measured or easily defined.”² Even so, for some things, there is truth in the measure-manage aphorism. As we saw with productivity hacker Nick Winter in chapter 4, measurement facilitates personal goal setting, analysis, and accountability. But to stop there is naive.

There are also aphorisms about the limitations of measurement. Here is one often misattributed to Einstein: “not everything that can be counted counts, and not everything that counts can be counted.” There is also the dilemma that measurement itself is distorting. Measuring one variable tends to prioritize it over others. (Winter’s solution to this quandary was to double down on counting and set goals for his social and romantic activities.) Worse yet, measurement tends to be followed by manipulation and cheating in competitive contexts. This has been observed in many fields, by many scholars. An anthropologist, commenting on overzealous measurement in education, put it this way: “when a measure becomes a target it ceases to be a good measure.”³

Kelly and Wolf, however, are unapologetic defenders of quantification. To announce QS more broadly, Wolf published two high-profile essays, accompanied by a TED talk. In the *New York Times Magazine*, Wolf declared that numbering had won the day: “We tolerate the pathologies of quantification—a dry, abstract, mechanical type of knowledge—because the results are so powerful. Numbering things allows tests, comparisons, experiments. Numbers make problems less resonant emotionally but more tractable intellectually. In science, in business and in the more reasonable sectors of government, numbers have won fair and square.” The “last redoubt” of this victory was “the cozy confines of personal life”: “sleep, exercise, sex, food, mood, location, alertness, productivity, even spiritual well-being.”⁴

QS is the measurement-obsessed wing of life hacking, with a significant focus on health. Its proponents anticipate and work toward the pervasive measurement of people’s so-called cozy confines. And unlike in traditional science, its answers will be “found in the personal,” as Kelly suggests. For example, when hacking his motivation, Nick Winter did derive his tactics from science-based self-help. But he also personally tested their efficacy and tracked the results. Although his reporting of averages is more precise than necessary (e.g., “7.03/10 happiness”), he has evidence of what works for him.

The idea that we might find solutions to personal and cosmic concerns in measurement is a powerful belief among life hackers. It reveals an intriguing

double vision, one that is both immediate—*self*-knowledge through *self*-tracking—and distant, given its aspirations toward the cosmic. Even so, this vision is not without distortion.

Data's Meaning

I've seen many QS Show & Tells over the years, in person and online, and I'm impressed by participants' candidness as they share their personal enthusiasms and difficulties. The most candid talk I've witnessed was by someone who tracked the genital, oral, digital, and anal microbiomes of himself and his wife before and after sex. Many people would, no doubt, prefer to keep these domains "cozy," as Wolf put it, especially if employers, insurers, or criminals can access the data. Yet he was pleased with his data and results. He had carefully swabbed everything before and after every session and discovered their biomes were more similar after sex.

Despite the novelty of his undertaking, his results weren't that surprising. What was the point of collecting all that data if only to awkwardly confirm the obvious? Not everything that can be counted counts.

My question about meaningful uses for self-tracking data is not unusual; it was raised at the first QS meeting by someone with a lot of data but no idea what to do with it. In a blog post written the day after, and in response to some "good-natured ridicule in the *Washington Post*," Gary Wolf explained that the group discussed how self-tracking data can spark new research questions, inform decisions, and be undertaken as art. Nonetheless, Wolf conceded "there's a compulsion, a curiosity, that seems to operate in advance of any particular use."⁵ This is in keeping with the hacker ethos: experimentation and tracking is a matter of personality as much as anything else.

Beyond Wolf's reasons, my conversations with self-trackers reveal a practical motive. People use tracking and experimentation for nominal (therapeutic) health hacking, to manage symptoms and find remedies.⁶ For example, Kay Stoner describes herself as a "data hoarder" and suffers from headaches. As a teen she kept journals, boxes of which are now in storage. And like most life hackers, she had an early affinity with computers. Her computer was nonjudgmental: "It didn't care who I was, as long as I followed the rules of syntax and realistic expectation." Tracking patterns and developing rules is also how she approached her headaches later in life. She

developed an application for recording her symptoms and their context but eventually settled on a paper-based diary.

Chronic illness and pain is depressing. It feels as if one is helpless and that the suffering will never end. Having a record showed Stoner that she could do things to lessen her headaches and that they do eventually end: “if you’ve got objective data showing you that something [helpful] did happen before, and it might just be possible again, that can nip the depression and sense of helplessness in the bud.” Having a record also allows her to clearly communicate with her doctors.

Life hackers, like anyone else, seek remedies for their ailments. Just as the author of *The Hacker’s Diet*, in chapter 1, wanted to lose weight, Stoner wants to lessen her migraines. What makes these two hackers different from most people is their systematic approach to understanding and addressing their concerns. Additionally, for hacker-types, tracking itself can be reassuring. Sometimes Stoner’s records of pain and failed remedies are dispiriting. At times she puts them aside. Yet ultimately, tracking and experimentation are the way she manages, finds hope, and communicates with others: “Data adds structure, meaning, and purpose to my life.”⁷

The Transhuman Roots of Becoming Superhuman

As I kid, I loved the opening sequence of *The Six Million Dollar Man*, which begins with footage of an aeronautic catastrophe. Astronaut Steve Austin is barely alive, and over scenes of surgery and bionic schematics a voice declares: “We can rebuild him. We have the technology. We can make him better than he was. Better...stronger...faster.” These three words are the title of the 2011 *New Yorker* profile of Tim Ferriss; two of them also appear in the title of the 2016 self-help book *Smarter Faster Better: The Secrets of Being Productive in Life and Business*.⁸ A clip from a 1970s TV show, of using science and technology to enhance human performance, lingers as a way of describing an aspiration to be superhuman.

Two of Tynan’s most popular titles are *Superhuman by Habit* and *Superhuman Social Skills*. Tim Ferriss’s book *The 4-Hour Body* is, according to its subtitle, *An Uncommon Guide to Rapid Fat-Loss, Incredible Sex, and Becoming Superhuman*. The mantra of his TV show is that “you don’t need to be superhuman to get superhuman results...you just need a better toolkit.”⁹ The

bionic man's treatment was not only therapeutic: he was enhanced. Similarly, the goal of *optimal* hacking is to transcend the nominal.

Of course, the desire to rise above is not new. In Greek mythology, Icarus flew too close to the sun. In Abrahamic mythology, the people of Babel dared to build a tower that could reach heaven. Neither of these myths spoke to genuine possibilities. Rather, they warned of hubris, and Icarus and the people of Babel were scattered upon the earth. But with the advances of science in the twentieth century, some hoped that real transcendence was imminent.

In 1957 Julian Huxley, an evolutionary biologist, wrote *Transhumanism* in the belief that “the human species can, if it wishes, transcend itself—not just sporadically, an individual here in one way, an individual there in another way, but in its entirety, as humanity.”¹⁰ His mechanism for this transcendence was a progressive eugenics. Huxley was skeptical of the biological notion of race and cognizant of its abuses, so he proposed raising the living standard of the “poorest classes” via a “curative and remedial” program. Huxley knew that education and health care led to people having fewer children. Raising the living standard among the impoverished accomplished two things. Those who never had a chance to meet their potential would finally be able to do so. Those with little potential would live better lives and have fewer children, lessening their effect on the human stock.¹¹ This philosophy informed much of his work, including as the first Director-General of the United Nations Educational, Scientific and Cultural Organization (UNESCO).

In subsequent decades, personal technologies displaced population eugenics as the expected driver of change. In the 1980s, transhumanists looked to genetic engineering and nanotechnology. In the 1990s, computers and networks led to predictions of artificial intelligences and cyborgs; they also inspired the possibility of becoming posthuman. Mark O'Connell explains this far-fetched notion in his 2017 book *To Be a Machine: Adventures among Cyborgs, Utopians, Hackers, and the Futurists Solving the Modest Problem of Death*. Executives and investors at companies including Google, Microsoft, Facebook, and Tesla speak of a near future of machine intelligence. Some find this worrying. Tesla's Elon Musk routinely warns the public of an artificial intelligence apocalypse. Others eagerly anticipate the rise of machines smarter than us. Of these optimistic Silicon Valley entrepreneurs, O'Connell writes that “these men—they were men, after all, almost to a man—all spoke of a future in which humans would merge with machines.”¹² For example,

in 2012 Google hired a new engineering director, inventor and transhumanist Ray Kurzweil, to lead its efforts at machine learning. The following year, the company also launched a \$750 million biotech company focused on antiaging. Kurzweil is famous for predicting in his 2005 book, *The Singularity Is Near*, that by around 2045 technology will advance so rapidly, as it learns to improve itself, that human life will become, literally, immaterial.¹³ Pessimists like Musk fear we will be wiped out. Optimists like Kurzweil think we will merge with our creations and live forever. In any case, Google has both the synthetic and organic bases covered.

Beyond inspiration, the internet gave transhumanists a means to find one another, to cohere. In 1994 *Wired* published “Meet the Extropians,” a profile of the latest transhuman advocates. Just as entropy is the universal tendency toward disorder, extropy is an opposing force, pushing us toward transcendence. Transhumanism sees the power of humanistic values, like creativity and reason, as expanding when coupled with technological advances. And extropianism is, in its most recent version, distilled into five principles: boundless expansion (of wisdom, effectiveness, life span), self-transformation (through reason and experimentation), dynamic optimism (rational and action based), intelligent technologies (so as to transcend our natural limits), and spontaneous order (arising from decentralized social coordination).¹⁴

It might seem like a reach to connect those trying to manage their inbox or migraines with extropians. Yet the latter’s five principles encompass the hacker ethos. And Kevin Kelly believes QS *will* address cosmic questions. Elsewhere he writes that extropy is driving us toward the inevitable emergence of an information superorganism.¹⁵ He’s not as audacious as Kurzweil, but they are simpatico.

Not every life hacker is an extropian, but both movements are drawn from the same wellspring, the Californian Ideology. As a *New Republic* essay about “the hackers trying to solve the problem of death” put it: the pursuit of “extended youth, neurological enhancement, and physical prowess... carries with it a distinctly Californian air of self-improvement, of better living through technology.”¹⁶ This ideology intensifies a trend toward what scholars refer to as “healthism,” wherein the struggle for well-being is privatized, categorizing health as an individual virtue and illness as a moral failing.¹⁷ Much as productivity hacking can devolve into an oppressive regime of self-flagellation, health hacking can become an accusatory regime of

vigor, with blame falling on those too sick to keep up. Not everyone has the resources of Kurzweil, who for a time employed an assistant to keep his hundreds of supplements straight.

The ultimate irony of the extropian view, of better living through technology, is that the optimal life is achieved only when it ceases to be living, in the biological sense. Until then, though, there are lots of other hacks for being better, stronger, faster—and even smarter.

“Butter Makes Me Smarter”

Back in 2008, among the small group of enthusiasts gathered in Kevin Kelly’s studio, there were two men already famous for self-tracking and experimentation.

Tim Ferriss, author of the what was then the recent best seller *The 4-Hour Workweek*, was in attendance. As with the life hacking label, Ferriss does not often mention the Quantified Self, but he does identify as a self-experimenter and has become good friends with Kevin Kelly. Two years after that first QS meeting, Ferriss published *The 4-Hour Body*, a compendium of hacks for tracking and improving the body (e.g., losing fat, gaining muscle, improving sex, and perfecting sleep). With that book, Ferriss took the idea of self-tracking and experimentation mainstream.

Seth Roberts, a professor of psychology, was at the meeting too. Roberts, aged 54, was an expert on rat cognition who split his time between Tsinghua University in Beijing and UC Berkeley. Among enthusiasts, he was already a well-known self-experimenter.

The previous fifteen years of experimentation had taught Roberts a lot. It began with acne. A dermatologist told Roberts that diet had no effect, but Roberts found that also to be true of the antibiotic pills he was prescribed: “I did my best to count the number of new pimples each day. I varied the number of pills I took: Week 1 a certain number per day, Week 2 a different number, Week 3 the first number. The results implied that the pills had no effect. I told my dermatologist this result. ‘Why did you do that?’ he asked, truly puzzled and slightly irritated.” Additionally, Roberts concluded that diet *was* a factor. In addition to benzoyl-peroxide cream, vitamin-B supplements helped, as did cutting out pizza and Diet Pepsi: “Taking all this together, I reduced my acne about 90%. Then, as predicted, it faded away.”¹⁸ This

early experience secured a distrust of mainstream medicine and a confidence in his own experimentation.

In the following years, Roberts learned that watching life-size talking heads on TV in the morning improved his mood. Skipping breakfast and standing more than eight hours a day improved his sleep. (He theorized that our prehistoric ancestors spent a lot of time on their feet, ate no breakfast, and saw others' faces first thing in the morning.) Standing, plus early morning light, also protected him from catching colds. Most significantly, Roberts found that drinking unflavored sugar water led to significant and long-lasting weight loss.

Roberts's theory was that foods that smell and taste good make the body think it is a good time to pack on fat against future privation, so the body increases appetite. Calories without much smell trick the body into thinking it is in lean times, so it lessens hunger and the amount of fat to be held in reserve. Roberts's unusual approach and novel theory were promoted by the authors of *Freakonomics* in 2005. In 2006, he published *The Shangri-La Diet: The No Hunger Eat Anything Weight Loss Plan*.¹⁹ The title of the book refers to a mythical utopia of easy weight loss. And the book sold well, especially among hacker-types. Hundreds of people posted to the forums on his website with their own experiments, results, and theories. A popular topic was nose clipping, an easy way of reducing smell and flavor by wearing a swimmer's nose clip while eating.

In the years after *The Shangri-La Diet*, Roberts continued his experiments, discussing them on his blog, in forums, and in lectures. For example, he found he could cut down his standing time by standing on a single leg, like a crane, until exhausted. When his endurance at single-leg standing increased, he started standing on one bent leg: "I could get exhausted in a reasonable length of time (say, 8 minutes), even after many days of doing it."²⁰

He continued to experiment with his diet as well. One day, he ate some leftover pork belly—the stuff from which bacon is made—and slept well and felt more energetic the next day. He set out to confirm this by tracking his sleep quality relative to whether he ate or abstained from 250 grams of pork fat a day. A few years later he concluded, "The main thing I learned was that pork fat really helps. ... How curious we are so often told animal fat is bad when an easy experiment shows it is good, at least for me."²¹

Just as standing eight hours a day was inconvenient, so was eating pork belly. Roberts found a more accessible source of fat on a day he couldn't get



Figure 6.1

Seth Roberts on treadmill desk; found at CalorieLab.com.

pork. During lunch at a restaurant, he had two extra servings of butter: “A few hours after lunch, I felt a pleasant warmth in my head. Pork belly hadn’t done that. Maybe butter was better for the brain than pork belly. I switched from pork belly to butter.”²² For years Roberts had also been tracking his daily brain function by having his computer time his response to simple challenges, such as adding numbers. After he began his butter diet (half a stick a day, about 60 grams), he noticed that his reaction time decreased, dropping from an average of 650 milliseconds per challenge to 620. His approach inspired others to test caffeine, soy, flaxseed oil, and fish oil.

Even if Roberts was getting a brain boost, he wondered if he was killing himself, as a cardiologist at one of his talks suggested. Roberts concluded the cardiologist didn’t understand the evidence regarding the connection between animal fat and heart disease. Also, so-called experts had been “utterly wrong” about diets for years, so he remained skeptical of those who warned

against saturated fat, and, more recently, sugar and processed foods. Roberts trusted his data more than experts, and he had a measure of his heart health.

A few months before my butter discovery, I had gotten a “heart scan”—a tomographic x-ray of my circulatory system. These scans are summarized by an Agatston score, a measure of calcification. Your Agatston score is the best predictor of whether you will have a heart attack in the next few years. After a year of eating a half stick of butter every day, I got a second heart scan. Remarkably, my Agatston score had improved (= less calcification), which is rare. Apparently my risk of a heart attack had gone down.²³

The sad irony is that this is the last paragraph of a posthumous publication. On April 28, 2014, two days after he died, “Seth Roberts’ Final Column: Butter Makes Me Smarter” appeared in the *New York Observer*.

In May of that year, his mother posted to his blog with what she knew: he died from coronary artery disease and an enlarged heart. She had no recent cholesterol numbers, but what she did have showed no heart risks beyond a report of high mercury levels, a likely result of eating fish and living in Beijing. Dozens of friends and fans posted eulogies online. At the 2015 Quantified Self Conference in San Francisco, Richard Sprague spoke of how Roberts had inspired his own experiments with fish oil. Sprague showed a chart of his friend’s final month of brain reaction time tests. On April 25, the day before he passed, Roberts’s last score was the best it had ever been. Sprague then concluded with a question: Could it be that in trying to maximize reaction times, Roberts and other self-experimenters were only “trading one thing off for another?”²⁴ He did not know the answer, but he knew what Roberts would have said: “Keep measuring!”

Experts, Experience, and Uncertainty

Sitting in the audience, I felt sad at the passing of someone I knew of online and frustrated by the abrupt conclusion to Sprague’s talk. Yes, Roberts would encourage others to keep measuring, *but why?* What does measuring and experimenting give you, especially if you might be harming yourself?

As Wolf notes, self-tracking can be compelling, compulsive even. For analytic types, this tracking and pattern seeking can leave them open to a powerful bias, which has its own allure. *Apophenia* is the human tendency to discern patterns in randomness, to perceive signal in the noise. It can manifest as the *clustering illusion*, when we forget that random data can be

clumpy, and as *pareidolia*, when we hear voices in static or see faces in burnt toast. It also leads us toward spurious correlations. If you like finding patterns, the more data you have, the more you will find—regardless of how much signal is actually present. Promiscuous pattern detection is a strength and a weakness, and Roberts thought the balance should err on the side of discovery. Traditional science was too set on incremental improvements. He wanted unexpected correlations and novel theories.

Roberts's acne and butter experiments also arise from two motives discussed earlier: nominal (therapeutic) and optimal (enhancing) hacking. Curing an ailment, such as acne, is a nominal hack; maximizing your abilities, such as brain performance, is an optimal one.

There are also aspects of the digital age itself that make self-treatment appealing, the first of which is uncertainty about expertise. The sociologist Anthony Giddens, among others, believes that Enlightenment thinkers were naive to think humanity could replace magical thinking and arbitrary tradition with the certainty of reason. Reason did not result in a world of "greater and greater certainty, but in one of methodological doubt."²⁵ This is as it should be. Outside of formal logic, reasoning is never certain, only justifiable. Nonetheless, Giddens's point about naiveté stands, especially in the twenty-first century. The surplus of information online does not mean that everyone is better informed. Rather, it leads some to be naively skeptical and foolishly credulous. Those who still claim vaccines cause autism consider themselves informed and critical thinkers, but their confusion is leading to a recurrence of measles. Even those who want to follow a sensible consensus are confused when this week's health stories contradict last week's. Is coffee good or bad for us, already, and whom are we supposed to trust?

The QS vision stands astride two ways of knowing: there are the claims of *experts* and the insights of our own *experience*. Both of these words are related to *experiment*, and they all derive from the Latin root *experiri*, to try or test. Are we to trust the experiments of experts or our own experience?

On one hand, experts' health recommendations are based on the combination of plausible theories and significant and replicable findings. The latter are typically achieved via two methods. First, researchers look for correlations in large groups of people (e.g., is disease more common among smokers?). Second, they perform experiments (e.g., are those who complete a smoking cessation program healthier than those who are not?). In both cases, large *numbers* of subjects, say $N=2000$, increase the reliability of the

findings. These findings might then prompt or support a plausible theory (e.g., chemicals in smoke damage human tissue).

Large- N studies are the gold standard of science. When done well, they yield findings that are highly probable and applicable. More than that, having different groups of subjects permits us to correct for common cognitive illusions. A control group can reveal that a symptom soon resolves itself anyway. A placebo group can reveal that people improve even when given a sham treatment. An alternative group can reveal that the efficacy, cost, and side effects of an existing treatment remain superior to the new one. As we saw with the reproducibility crisis of chapter 4, a lot of popular health and self-help advice is based on research that falls short of this standard.

Self-experimenters, on the other hand, base their recommendations on their singular experience of one subject, of $N=1$. They often track all manner of things and look for correlations. For example, Roberts routinely tracked his brain reaction time and noticed it improved when he ate a lot of butter. They also conduct experiments, as when Roberts subsequently varied the amounts of butter he ate to find the right dosage. Self-experimenters do test controls (no standing versus standing) and alternatives (pork fat versus butter). Yet they often do so in a haphazard way. With one person, it's hard to isolate the signal of an effect from the noise of daily life. How do you untangle how much you stood, how many faces you saw, and how much fat you consumed in a day? Also, since acne often does "fade away" as one gets older, a single subject can't easily distinguish between this normal fading effect and the effect of a treatment—and toying with the dosage of antibiotics is not a good idea, especially within the first week.

I don't recall any of Roberts's self-experiments using a placebo—many of his interventions, such as standing, are difficult to deceive *anyone* about, to say nothing of *yourself*. Roberts claimed that because most of his initial discoveries were accidental, they could not be the result of the placebo effect, but it is easy to see a random variation, seize upon it, and confirm it under the placebo effect. And as I read Roberts's sequence of claims about improving sleep (i.e., no breakfast, standing, eating fat, eating honey, taking vitamin D3, and orange light exposure) I couldn't help wondering how effective the previous remedy had been if he needed yet another?

This is not to disparage the role self-experimentation has played in science. There is a colorful history of researchers experimenting on themselves. Pierre Curie taped radium salts to his arm to demonstrate that radiation

burns flesh. Pierre and Marie suggested that radiation could destroy cancer (without realizing it also causes it). This anecdote, and other successes, makes it seem as if self-experimentation is well worth it. And if the experimenter succeeds, it may be. Yet the history books are less likely to include the many stories of those who harmed themselves without any gain.

Single-subject studies do have some advantages. Traditional studies, diagnoses, and remedies are based on the notion of average persons, those at the center of a bell curve, rather than outliers.²⁶ Given that there are billions of people, each of whom has a unique genetic and environmental profile, we are all outliers in one way or another. Self-experimentation is tailored to the outlier self. Also, there is a lot of exciting work going on in the realm of citizen science. The participation of nonscientists in the collection and analysis of data according to safe and rigorous protocols is fantastic. Imagine big data studies, of millions of people, wearing trackers in daily life. (I think of these as big-*N* studies, $N=1 \times 5,000,000$.) Doing this rigorously and ethically is challenging but worthwhile.

Health hackers also point out that traditional science and health care have significant problems. Roberts felt that health experts “routinely overstate benefits and understate costs of the treatment they are promoting.” The diet recommendations of experts had been “utterly wrong” for years. Roberts wrote that he had been told animal fat is bad, but his pork belly experiment showed that “it is good, at least for me.”²⁷ There is also the simple issue of trust. Is the medical industry really acting on your behalf? Do you even have access to affordable health care? In the United States some people are buying pet antibiotics on Amazon as a low-cost alternative for themselves.

Adding to these problems, the day-to-day experience of health care can be alienating. Kay Stoner finds it disconcerting to rely on those who barely know her.

We’re told that trained professionals are the only ones who are actually qualified to ensure our quality of life. To my mind, that fosters an artificial dependence on (and expectation of) something that’s never going to happen—i.e., get everything you need from someone else who literally doesn’t have the time to do a thorough job. If your doctor is only allowed to see you for 15 minutes at a time, and you only see them 4–5 times a year, they have all of an hour, each year, to get to know you and your health/life situation. It’s unhelpful to all of us.²⁸

It is easy to appreciate why people like Stoner turn to health hacking. There is a clear harm against which a benefit might be realized. Chronic

ailments, including migraines, diabetes, and allergies, are distressing, and their sufferers seek whatever might help. Tracking and experimentation have proven themselves useful for these conditions, and working with a supportive professional is ideal. Stoner seems to have found this; Roberts did not. However, eating half a stick of butter to shave 30 milliseconds (5 percent) off an arbitrary test of acuity is another matter. There is an unlikely or slight benefit in exchange for uncertain but significant harm.

In addition to personal risk, which hackers do have the right to take, the larger concern is when self-experimenting signals an abandonment of rigor. For all of the problems traditional science and health care have, that doesn't mean alternatives are *necessarily* better. Steve Jobs's dalliance with acupuncture and supplements to treat cancer, over surgery, likely contributed to his early demise. Similarly, a lack of coherent diet advice from the establishment over the past few decades doesn't mean anything goes under the guise of self-tracking and experimentation. Unfortunately, being a bright hacker-type doesn't mean this insight is always taken to heart.

Supplements and Self-Help

In the history of self-help, there is a legacy of gurus who begin their careers selling supplements. In 2000, the same year he graduated from Princeton, Tim Ferriss began selling BrainQUICKEN, which claimed to be “the world's first neural accelerator”:

BrainQUICKEN is a lab-tested performance product scientifically engineered to quickly increase the speed of neural transmission and information processing (perceptual focus, memory storage, and recall), with a prolonged effect of 2–6 hours following each dosage.

Active compounds in the patent-pending BrainQUICKEN complex are supported by clinical research and have been cited in over 4,050 scientific studies. Just 1 of the 18 active components alone has been demonstrated with computer-administered testing to safely increase short-term memory and reaction speed in excess of 35%.²⁹

This supplement is what is referred to as a “nootropic,” something that enhances cognitive sharpness and retention. Ferriss's supplement, which he sold online, was “guaranteed to produce results in 30 minutes or less, as proven by top students at Harvard, Princeton, Yale, Oxford, and Tokyo Universities.”

This type of shady supplement claim is all too common in the United States. Despite BrainQUICKEN's having been lab-tested—whatever that

means—there is no evidence of independent and controlled studies. Even if all the ingredients tested as safe, what of their interactions? And the patent-pending claim is just the latest iteration of quackery from the nineteenth century. Quackery is a term derived from *quacksalver*, a medieval “hawker of salve” whose greatest virtue was the loudness of his voice in a crowded market. Subsequent quacks claimed exclusives patents on their nostrums, hence *patent medicine*. I suspect Ferriss submitted a provisional patent application, which is perfunctory and temporary, and permits the filer to claim “patent pending.”

Initial sales of BrainQUICKEN were slow, but Ferriss noticed that customers were also reporting physical benefits: “I was hearing from high-level NCAA athletes: ‘I’m jumping higher!’ ‘My time off the blocks is faster!’” So he rebranded the product as BodyQuick and targeted athletes instead: “I thought people wanted to be smarter and they do. They just won’t spend \$50 on it.”³⁰ As he writes in *The 4-Hour Workweek*, success followed—how much is a matter of speculation—and the stress of it all prompted him to flee overseas. There he learned to manage his business from afar and write a book about what he learned.

Ferriss is not the first supplement salesman to become a self-help guru. In fact, there’s a lineage of supplement salesmen, from those on the road, to those on television, to those online.

In 1953, John Earl Shoaff was at a seminar on the “laws of success” in Long Beach, California. The talk was given by J. B. Jones, founder of a nutritional supplement company. Jones was a traveling supplements salesman who also gave self-help talks. Shoaff was so inspired he joined Jones and followed his example of seminars and supplement sales. Shoaff would eventually found his own supplements company, and the pattern was repeated again when he was joined by Jim Rohn.

Rohn’s 1985 book, *7 Strategies for Wealth & Happiness: Power Ideas from America’s Foremost Business Philosopher*, is a compendium of wisdom passed on from Shoaff to Rohn. Rohn was hired by Shoaff after they met at a sales conference, and for the next five years, Rohn said, he “learned many of life’s lessons from Mr. Shoaff. He treated me like a son, spending hours teaching me his personal philosophy.”³¹ Shoaff died relatively young, but Rohn had the torch well in hand and continued with supplements and seminars. In the 1970s, Rohn took Tony Robbins under his wing, and Robbins, at the age of seventeen, became a promoter of Rohn’s seminars.

Robbins is likely the biggest self-help guru in the States—despite the subtitle of his biopic *Tony Robbins: I Am Not Your Guru* (2016). Instead of a traveling salesman, he is an infomercial star selling seminars over the airwaves. (He also sells supplements, of course.) When Robbins appeared on the *Tim Ferriss Show*, he and Ferriss discussed the profound influence of Jim Rohn. Ferriss, a collector of quotes, remarked that he was amazed at how many misattributed quotes originated with Rohn. And as a kid with insomnia, Ferriss watched lots of infomercials late at night. When Ferriss launched his early ventures while in college, he looked to them as his template. In addition to keeping a three-ring binder of persuasive ads, he'd call in to infomercials so as to deconstruct their sales scripts and tactics, which is evident in his Brain-QUICKEN marketing.³² Ferriss continues Rohn's legacy by offering his supplements and self-help online.

Despite this tradition, Ferriss is an unrivaled pharmacological compendium. As one reviewer of *The 4-Hour Body* writes, "Mr. Ferriss talks up a witches' brew of juices, nuts, potions and drugs. Here's a typical burp from an early chapter: 'Overfat? Try timed protein and pre-meal lemon juice. Under-muscled? Try ginger and sauerkraut. Can't sleep? Try upping your saturated fat or using cold exposure.'"³³

These kitchen interventions, like many supplements, are *mostly* harmless, but experimentation is not without its dangers. Ferriss once gave himself severe diarrhea by experimenting with megadoses of resveratrol. This compound is found in wine and may increase endurance and longevity—at least in rats. Ferriss wanted to impress the folks at a sports science lab with his endurance and took a bunch of tablets on his own without realizing they also contained a laxative. He was stricken with intense cramps and profuse sweating and remained on a toilet for forty-five minutes—an endurance record of a different sort.

Ferriss and others find supplements and self-help quotations compelling because they are tools: small, easily consumed boosts to body and brain—or so they believe.

It Works for Me

Hacker culture has been fostered by three San Francisco Bay Area publishers. We've already met Stewart Brand (of *Whole Earth* fame) and Kevin Kelly (*Wired*, *Cool Tools*, and *QS*). The third is publisher Tim O'Reilly, whose firm's technical

books are beloved by programmers. Like Brand and Kelly, he is a convener, organizing conferences on tech-related topics. At these conferences, neologisms and movements emerge, including *Web 2.0* and *open source*. Recall that *life hacking* was first discussed at an O'Reilly conference, that O'Brien and Mann first wrote about it in a column for O'Reilly's *Make* magazine, and that they were supposed to publish a book for O'Reilly's Hack series.

When Tim O'Reilly joined Kevin Kelly on the *Cool Tools* podcast, he shared some of his favorite supplements: "They are kind of magical... they don't work for everybody." For colds, O'Reilly recommended a combination of Gan Mao Ling and black elderberry: "Some people find this to be quack medicine, but I think of my dad, who was a neurologist, talking about acupuncture and saying 'It doesn't make any sense, but if it works, it works.'" And Stewart Brand turned O'Reilly on to an antiaging and energy supplement: "Brand said you got to try this and I did and... I felt like it took 10 years off my life." O'Reilly especially appreciates that the supplement is touted by Bruce Ames, a famed Berkeley biochemist, who "says it doesn't work for him, but the science says it should work. I like that he acknowledges that it doesn't work for everybody."³⁴

In both of O'Reilly's recommendations, he touches on the fundamentals of science, of plausible theories and rigorous results. However, his examples fall short of a high standard. Acupuncture's theory of energy meridians doesn't make any sense, and rigorous studies show no results. Scientific theory says the energy supplement Brand recommended should work, and the results are inconsistent, but it works for Brand and O'Reilly. Neither acupuncture nor the supplement are supported by solid theory *and* results, but they seem to work for some people and so they are "kind of magical."

Why do we find "kind of magical" and "works for me" thinking even among the rationally minded?³⁵ As already discussed, the Enlightenment, modernity, and the digital age can be characterized by *increasing* levels of uncertainty. People then look for ways to fill the void, especially in the face of personal suffering.

Beyond the penchant for experimentation, there is the inherent optimism of the hacker mind-set. With the right amount of understanding and cleverness, we should be able to hack the limitations of the human body. This belief isn't founded in the supernatural but by way of extrapolation. Some high-tech innovations scale at an exponential rate. So technologists like Ray Kurzweil take their supplements in hopes of reaching the moment

when the advances of biotechnology outpace the declines of old age. Other Silicon Valley executives are attempting to forestall aging via eight-thousand-dollar blood transfusions from the young.

This belief in technology is not unfounded, and a first significant step toward an extraordinary future is already under way. An envisioned benefit of the Quantified Self is personalized medicine: tailoring interventions to patients' specific biology and history. For example, for decades we have known that about 25 percent of breast cancer patients have a gene that leads to excessive amounts of cellular growth receptors (HER2 proteins). These patients often receive a drug that targets this protein. With better gene sequencing and patient tracking, such customization could become commonplace. But we're not there yet.

Another explanation for this type of thinking is that, simply, it is human nature to trust one's lived experience, regardless of caveats about placebo effects and confounding variables. I am prone to this myself. At the onset of a cold, I start taking zinc lozenges. Research evidence for their efficacy is weak to none, and zinc can lessen your ability to taste. But I've seen colds dissipate after my lozenge regime and have never had long-term effects. It works for me. In turn, my spouse swears by her "hot toddies," a lemon, liquor, and honey drink. The merit of these two interventions is that they are long known, innocuous, and cheap.

Everyone is entitled to using his or her harmless pet remedies. But that which is novel, unlikely to be safe or effective, and a source of someone else's profit deserves scrutiny. The claim "if it works, it works" only works when the intervention is more effective and less costly (in money and risk) relative to sham treatments and proven alternatives.

Soylent, Choice, and Control

Rob Rhinehart applies the hacker ethos to every domain of his life. He's a minimalist and appreciates challenges. Rhinehart has run his home on a single 100-watt solar panel and once undertook the challenge of using no more than four liters of water a day. He calculates that instead of washing dirty clothing, it is more efficient and green to regularly donate it to charity and order custom clothing from China—a calculation reminiscent of Tynan throwing away pennies and nickels. And when it comes to eating, he believes he can engineer a nutritious meal replacement.

In a 2013 post entitled “How I Stopped Eating Food,” the software engineer wrote of the benefits of his thirty-day experiment with an early version of Soylent, a powdered shake. Rhinehart studied textbooks and Food and Drug Administration (FDA) publications and ordered constituent nutrients online. As he blogged about it, others commented and made suggestions. He offered free batches of his mix to those who would send him blood work: “Bonus points for getting a psych evaluation before and after. The brain is an organ.”³⁶

Rhinehart’s own results were extraordinary. He reported that he had healthier skin, whiter teeth, and thicker hair, and his dandruff was gone. He felt like the Six Million Dollar Man: his physique had improved, his stamina had increased, and his mental performance was sharper than ever. His awareness was elevated, and he found music more enjoyable. Rhinehart marveled, “I notice beauty and art around me that I never did before.” In terms of his “quantified diet,” his cravings and tastes finally matched his needs; he had “full visibility and control” over what was going in to his body.³⁷

I was aware of Soylent from Rhinehart’s blog from early on but was skeptical *because* of all of these purported benefits. He sounded like a high-tech quacksalver with a less-than-palatable elixir. Throughout much of its history, from version 1.0 in early 2014 through version 1.7 in late 2016, Soylent users complained of gastric distress and flatulence. (“Version 2.0” is the ready-to-drink version launched in 2015.)

As the product matured, Rhinehart discontinued the health claims and shifted focus. In 2015, he declared that Soylent was “perhaps the most ecologically efficient food ever created.”³⁸ Elixir was out, and efficient food was in. If it didn’t improve health, it would at least provide convenient nutrition for a low cost. Yet early in 2017, his blog was replaced by an enigmatic quote from Ralph Waldo Emerson: “Undoubtedly we have no questions to ask which are unanswerable.” That is, anything we might ask has an answer, if we have sufficient perseverance. I suspect he took down his website at the behest of Soylent’s investors and lawyers. Apparently, taking down his website was not enough. Later in 2017, Rhinehart stepped down as Soylent’s CEO—taking instead the title of Executive Chairman. Soylent enthusiasts feared investors wanted Soylent as a high-end niche product rather than a universal solution to nutrition.

In any case, and independent of work on this book, I know a number of folks who have used meal replacements for breakfast or lunch. And as with the dominance of quantification, the privileging of experience over

expertise, and the allure of high-tech gadgets, their reasons for consuming Soylent speak to their personality and the character of the digital age.

I met Ron A. at a park where our dogs played together. From our brief conversations, I knew he was a software engineer, and he knew that I had written a book about Wikipedia. We were fellow geeks. By the way he dressed, I also suspected he would be a good source for this book. Ron often wore a colored T-shirt with the day of the week printed on it. At midweek he wore a green “Wednesday” T-shirt; on the next day he wore a “Thursday” T-shirt in navy blue. When I interviewed him, he said the shirts were part of an effort to “make a ‘uniform’ of simple repeatable things to wear in order to reduce daily routine cognitive load.”³⁹ Ron Googled such clothing to see whether it existed, and, indeed, shirts of this type could be had at the site Minimalist Tees—now defunct. Many other geeks and designers have done something similar, including Steve Jobs with his blue jeans and black turtlenecks.

A complement to the uncertainty of the digital age is our extraordinary amount of choice: we are invited to rate, like, click, and swipe every facet of life. Although this sounds wonderful, paradoxically, choice can be anxiety provoking as we waste time deciding what to choose and then second-guessing ourselves.⁴⁰ Some look to celebrities for direction. Thousands believe that if something is sold on Gwyneth Paltrow’s goop.com it must work, including “Wearable Stickers that Promote Healing (Really!)” Although hackers appreciate choice and complexity in specific domains, they seek to simplify everywhere else. Gear lists and minimalism are two such approaches to simplifying their relationship to stuff: prioritize what is valuable and discard everything else. As minimalism is to stuff, meal substitutes are to nutrition.

Soylent allows Ron to simplify: to save on time (shopping, cooking, and cleaning), money (it is an inexpensive source of nutrients), and waste (it can keep for weeks). He consumes it for lunch, except when he goes out with coworkers.

I asked Ron what prompted him to try Soylent, and he explained it was related to his interest in bitcoin, the online crypto-currency. Ron followed Rhinehart’s early experiments and noted that “as a fellow software engineer,” he related to Rhinehart’s approach to nutrition. When Rhinehart announced he would accept bitcoins in the crowdfunding of a salable product, Ron pitched in.

Lee Hutchinson, senior editor at *Ars Technica*, writes that Soylent divides people into those who are repulsed by the idea and those “desperate to receive their orders.” The latter turn to Soylent because they are “geek types” for whom cooking is a “fuzzy” analog process, which prompts anxiety. (Baking, in contrast, is thought to be more deterministic.) Also, it helps people with unhealthy relationships to food.

Soylent is food methadone. It’s not quite the magic food pill from science fiction, but it does have a lot of that pill’s qualities. It’s satiating without being delicious; eating it won’t provide the endorphin rush that overeaters experience when gorging; and it’s easy to prepare. It’s a thing you can replace snacks or some meals with (or even all meals, if you want), without having to fight urges. Or, to put it another way—when you’re used to eating chicken nuggets and hot dogs exclusively, the effort that might go into either making a healthy salad or going to a restaurant and ordering one might seem overwhelming next to just eating some more nuggets or just ordering the hot dog. Soylent, then, can be just a thing that fuels your body without triggering anxiety or more depression about eating the wrong thing.⁴¹

It seems paradoxical that some Soylent users are delving into the minutiae of nutrition and blood work, whereas others choose Soylent for its simplicity. The very idea of choosing simplicity seems paradoxical. But for hackers, not so much.

As we’ve already seen, hackers are happy to invest time and energy up front if they end up with a system to use in the future. As Tynan wrote about the benefits of automation: “I love one-time investments that pay off over the very long term. The reason I call my books *Superhuman* is because you can often achieve results that look superhuman just by setting up lots of easy systems. ... And you get to keep those benefits for a long time with little or no maintenance.”⁴²

Also, life hackers appreciate abstraction and modularity, which they use to master complex systems. Imagine that in a software application I need to sort a list of names. Without caring about how it works, I can pass my names to the `sort()` function, and it returns a sorted list. In this way, sorting is modularized: I don’t need to know the details. Should I need to get into the details and implement my own version, I can, but otherwise I defer to `sort()`. When Rhinehart wrote that he had “full visibility and control,” this meant that he and other enthusiasts could engineer the Soylent formula, but most users need not bother. Because the process is transparent, they can join the conversation should they need to, but once they’ve done their initial investigations, they can save themselves the cognitive load of preparing a meal.

In short, hackers are used to working with complex systems and many choices, but they set good defaults at the start so they can focus on what most interests them. As Colin Wright wrote about minimalism: “It’s cutting out the things you don’t care about—that you don’t need—so you can invest more of yourself in the stuff you’re passionate about.”⁴³ As it was with software and stuff, so it is now with food.

Wanting to Believe

Like Kevin Kelly and Gary Wolf, Chris Anderson is another prominent *Wired* alumnus, having served as editor-in-chief from 2001 to 2012. Anderson began tracking early on, shortly after Kelly’s first meeting, with lots of questions in mind. In April 2016 he tweeted that “after many years of self-tracking everything (activity, work, sleep),” he had decided it was “~pointless. No non-obvious lessons or incentives :(.”⁴⁴ In response to his tweet, some folks defended the practice: they learned which food caused weight gain, they enjoyed plotting their data, and supposedly someone had self-diagnosed a disease missed by professionals. A few were keeping at it in the hopes that better analytics in the future might yield insights. Others agreed with Anderson and shared their disappointment or their frustration with unreliable devices and data. Stewart Brand replied: “Being lazier than Chris, I only lasted a few months self-tracking. Not all mirrors are windows.”⁴⁵ Self-tracking proved to be a near enemy of self-knowledge. When Anderson was asked why he had persisted for so long, he tersely responded: “Wanted to believe.”

This chapter has been about QS’s vision, which is directed inward, toward “self knowledge through numbers.” Kelly and others believe any resulting insights might also address big questions of the distant horizon: What is human? Are we necessarily biological and mortal? Both the prosaic and cosmic questions are compelling. First, who doesn’t want to sleep better, stay fit, and be rid of all the embarrassing and painful nuisances of the body, especially as it ages? Self-tracking and experimentation can be useful, when done with care. However, despite Kelly’s suggestion that answers “will be found in the personal,” the personal is not a panacea: “it’s working for me” may, in fact, not be. Second, anyone who grew up with bionic heroes will find the idea of cyborgs and machine intelligences intriguing. Some believe this to be a worthwhile aspiration, and it gives them hope in the face of an

uncertain future. However, this vision of immediate benefits and distant possibilities is not always clear sighted.

We've seen that the digital age's abundance of information and choice can be overwhelming. We are uncertain about whose advice to follow, whom to trust. Hackers like Roberts, naturally, choose to take it upon themselves, to trust their own systems and formulations of how to live well, often for good reasons, but not always with good results. Hackers tend to be an optimistic lot; they want to believe, if for no other reason than to have a sense of control and meaning. As I noted earlier, Kevin Kelly's pinned tweet is that "over the long term, the future is decided by optimists."⁴⁶ Transhumanists, extropians, hackers, and optimizing optimists aren't simply predicting the future, they are working to make it. With the help of experiments, systems, and supplements, they strive to be superhuman: stronger and smarter—even if only by 30 milliseconds. Yet those running toward the future, with their gaze fixed on the distant horizon, can also easily miss the approaching edge.

