

Galton's iPhone

“Neither information nor a drug fix ever gives any happiness when you have it, but will make you miserable when you don’t.”

—MICHEL SERRES

“The day-by-day experience of a managed existence leads us all to take a world of fictitious substances for granted. . . . The verbal amoebas by which we designate the management-bred phantoms thus connote self-important enlightenment, social concern and rationality without however denoting anything which we could ourselves taste, smell or experience. In this semantic desert full of muddled echoes we need a Linus blanket, some prestigious fetish that we can drag around to feel like decent defenders of sacred values.”

—IVAN ILLICH

The future belongs to datasexuals. As BigThink, a website promoting intellectual debate, explained in a brief but provocative essay posted in April 2012, “The same cultural zeitgeist that gave us the metrosexual—the urban male obsessive about grooming and personal appearance—is also creating its digital equivalent: the datasexual.” BigThink didn’t mean this as satire; the datasexual, it argued, is a real—and increasingly ubiquitous—archetype, a subtle hint that New York is losing the cultural battle to Silicon Valley. “The datasexual looks a lot like you and me,” continued the essay, “but what’s different is their preoccupation

with personal data. They are relentlessly digital, they obsessively record everything about their personal lives, and they think that data is sexy. . . . Their lives—from a data perspective, at least—are perfectly groomed.”

Datasexuals are to Silicon Valley what hipsters are to Brooklyn: both are ubiquitous and, after a certain point, annoying. These days, one has to search really hard to find daily activities that are not being tracked and recorded; now that everyone carries a smartphone, all walks of human existence are subject to measurement, analysis, and sharing. A bunch of inventive entrepreneurs have even developed smart toothbrushes that can record—and share—everything about our teeth-brushing habits; they come equipped with clever sensors that not only keep track of our brushing behavior but also share this data—thanks to a matching smartphone app—with dentists or care providers for treatment planning. Let’s face it, who wouldn’t relish a moment to reminisce over those graphs, especially if they can be displayed over our bathroom mirror? Besides, they’re far more entertaining than those wonky charts about African poverty you saw on television.

Once you embrace the datasexual mind-set, there is no rest from self-monitoring, even at bedtime. In addition to a panoply of gadgets that already allow you to monitor your sleep cycle—well, as long as you are willing to attach their sensors to your head during sleep—a new generation of devices will enable us to relate the quality of our sleep to our environment. Thus, researchers at Intel are working on a system—reassuringly called Lullaby—that incorporates and processes data inputs from an infrared camera, two passive infrared motion detectors, and light, air-quality, sound, and temperature sensors. All these sensors collect data about what’s happening around you and map it—with graphs, statistics, and all—on a touchscreen device on your bedside table.

Why would you want to turn your bedroom into a temple of surveillance and place a chart-spewing monitor next to your bed (after all, nothing beats enjoying some odd visualization porn while you sleep)? Well, the idea is, the researchers say, that Lullaby could “provide concrete recommendations for addressing the identified sleep disruptors.” How did our prescientific selves even think of shutting windows and drawing blinds before? A complete mystery.

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Now your sleep will be disturbed by anxiety, even if nothing in your environment has actually bothered you before. Now that the sensors say your sleep is full of “disruptors,” who are you to argue with them? Solutionism would be funny if it weren’t so tragic.

Alexandra Carmichael, a health entrepreneur and one keen devotee of the datasexual lifestyle, used to record forty things about her daily life, from sleep and morning weight to caloric intake and mood, not to mention sex, exercise, and day of menstrual cycle. The *Wall Street Journal* has profiled another datasexual—New York graphic designer Nicholas Felton—who, year in and year out, publishes his own personal annual report (the unassumingly titled Feltron Annual Report). What a blessing it must be to know that in 2007 he received thirteen postcards, lost six games of pool, and read 4,736 book pages; the lucky chap, we are told, also “tracked every New York street he walked and sorted the 632 beers he consumed by country of origin.” In 2011, he logged forty-five visits to the gym and just nine visits to the liquor store. Felton’s offspring won’t have much to hold against him. His other statistics for that year must have been equally convincing: Facebook hired Felton in 2011 (it’s probably safe to assume that no other candidate had a longer resume). What’s not to like about this “Taylorism within”?

In *Financial Times*, we read of another self-tracker—a certain Joe Betts-LaCroix, who for three years in a row has been meticulously graphing not just his own weight but also that of his wife and two kids. We also learn that Joe has been tracking his wife’s menstrual cycle for ten years—and yet it seems that she doesn’t appreciate all the effort. “I was giving birth to our son, and instead of holding my hand and supporting me and hugging me, he was sitting in the corner entering the time between my contractions into a spreadsheet,” she told *Financial Times* (let’s hope that Joe was using open-source software).

The most impressive feat of self-measurement comes from Larry Smarr, a computer scientist recently profiled in the *Atlantic*. Smarr is in a different league from most self-trackers; he tracks everything they track—and more. For example, he collects and analyzes his poop. As the *Atlantic* puts it, “He is deep into the biochemistry of his feces, keeping detailed charts of their microbial contents. Larry has even been known to haul carefully boxed samples out of his

kitchen refrigerator to show incautious visitors.” Datasexuals, it seems, are not afraid to get their hands dirty.

But don't let Internet-centrism trick you into thinking that the digital revolution has taken some kind of unprecedented fecal turn. In fact, Smarr's quest to grasp the inner truth of his feces may be abetted by the latest technologies, but as self-improvement projects go, it's an old one. Meet Horace Fletcher (1849–1919), a health-food maniac on par with Larry Smarr, who earned the nickname “the Great Masticator” for urging his followers to chew their food thirty-two times. Fletcher didn't have Smarr's panoply of devices, but he still took to weighing his own feces and analyzing them under a microscope. The man was convinced that, if humans followed a proper mastication regime, their excreta would be quite dry, having only “the odor of moist clay or a hot biscuit” (that sounded convincing enough to Henry James, who was a big Fletcher fan and promoter). Fletcher's 1912 book *Fletcherism, What It Is: Or, How I Became Young at Sixty* contains charts bragging about the lightness of the author's stools; Fletcher was a datasexual par excellence (never mind that, having become young at sixty, he died at sixty-eight). His rhetorical question—“Is there anything more sacred than serving faithfully at the altar of our Holy Efficiency?”—is an apt slogan for contemporary datasexuals like Smarr.

Feces aside, there have been many similar experimenters before Fletcher. Some might point to Benjamin Franklin, who, obsessed with his quest to achieve “moral perfection,” kept a diary ledger where he tracked his progress along thirteen virtues, like frugality and temperance. In 1880 Francis Galton, a pioneer of statistics and the godfather of eugenics, exhibited what he called a “pocket registrar,” a clever invention that allowed him to record individuals of different types in a crowd without drawing attention.

According to his biographer, Michael Bulmer, Galton also “drew attention to the ease with which registers may be kept by pricking holes in paper in different compartments with a fine needle.” What did Galton do with this clever method? According to Bulmer, Galton used it “to construct a ‘Beauty-Map’ of the British Isles, classifying the girls he passed in the street or elsewhere as attractive, indifferent, or repellent.” London ranked highest for beauty and Aberdeen, lowest. Likewise, he counted the number of fidgets at

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meetings of the Royal Geographical Society as an indication of just how bored the audience was. Of course, we know where this obsession with measurements got Galton: it ended up in eugenics. Now, if only he'd had an iPhone! Although one can find many similar examples throughout history, most such attempts were either quasi-academic, small in scale, or pursued by wildly eccentric individuals like Fletcher or Galton. Today, such efforts are pursued on a much wider, global scale. It's true that many geeks who opt to participate in such schemes do qualify as eccentric. But they still look acceptable enough to attract the attention of venture capitalists and other uptight corporate investors, who have been pouring money into self-tracking start-ups.

Seeing Like a Self

It's hard to imagine the previous generations of self-trackers forming a social movement of some kind—one with its own proselytizers, regular conferences, and a set of shared goals and aspirations. The existence of such a movement would indicate that there was something cool, even laudable, about the very activity of tracking, a tracking aesthetics of sorts. As far as social movements go, this one would be all about celebrating a common means, not a common end.

Such a movement—widely known as the Quantified Self—has in fact emerged over the last five years under the leadership of its two cofounders, Kevin Kelly—the same Kelly who wrote *What Technology Wants*—and Gary Wolf, a technology journalist, formerly of *Wired*. In 2010 Wolf penned something of a manifesto for this nascent movement, which was published—not bad for a manifesto—in the *New York Times Magazine*, launching the Quantified Self movement not just nationally but globally.

In his article, Wolf identifies four factors that explain the meteoric rise of self-tracking over the last few years. First, electronic sensors shrank in size and became more powerful. Second, once they entered our smartphones, they became ubiquitous. Third, social media—from Facebook to Twitter—made sharing seem normal. Fourth, the idea of cloud computing made it possible (and acceptable) to offload one's data onto distant servers, where, merged with the data of other users, it can be expected to yield better results.

(Wolf, of course, doesn't put it this way; in the tradition of *Wired* mysticism, he invokes a spiritual dimension, writing of "the rise of a global superintelligence known as the cloud.") The sharing and cloud aspects are particularly important: revealing one's own measurements can provide additional motivation (e.g., many geeks desperate to lose weight are now buying electronic scales that automatically tweet their weight to their Twitter followers—yet another example of a solutionist intervention not available just ten years ago) while also fostering the same sense of community that propels well-established programs like Weight Watchers or Alcoholics Anonymous.

However, Wolf's four-factor list, although useful (even if a bit epochalist), explains only the technological infrastructure that has made mass-scale self-tracking possible. But has it become more desirable? Or did we want it all along, but the right gadgets and clouds were missing? Wolf, in true geek fashion, emphasizes the unique ways in which self-tracking—and quantification more broadly—can help shield us from subjectivity and emotion, supposedly a benefit. "We tolerate the pathologies of quantification—a dry, abstract, mechanical type of knowledge—because the results are so powerful," he notes. "Numbering things allows tests, comparisons, experiments. Numbers make problems less resonant emotionally but more tractable intellectually."

The idea that some comparisons or factoids probably should be left uninvestigated doesn't naturally occur to proponents of self-tracking. After all, they do fashion themselves as defenders of the Enlightenment who are fighting the dark forces of superstition and ignorance. Asked by the *Atlantic* if he'd rather not know something about his future diseases, poop aficionado Smarr frowns and says that he doesn't understand why anyone would ever want that. As the *Atlantic* puts it, "To him, not wanting to know something—even bad news—just doesn't compute. His whole life is about finding out. He's a scientist to his core." Scientism is the greatest enabler of innovation known to mankind.

Perhaps it's the hoarding urge that drives so many of the Quantified Self initiatives. Of all the things to be hoarded, data—especially data stored in the cloud rather than on hard drives in one's bedroom—has all the right attributes. It doesn't take much

space, it's easy to move, and if you play your cards right, you can even make some money off it. Small, mobile, lucrative: it's a perfect hoarding target for our hypercapitalist age. It is a perfect response to the riddles and anxieties of our complex times, with every idea believed to be connected to every other idea and with the government and corporations hiding the truth from the rest of us.

In this world, the real causes are hidden and can only be uncovered through hard, diligent analysis—and the more quantitative it is, the better. Only if everything is recorded and quantified, can one discover what the Masons, the Vatican, the Ivy League, and the Man himself desperately want to hide. As one card-carrying member of the Quantified Self movement told the *Wall Street Journal*, “I want to create connections where I didn't know that they existed. I'm a natural annotator.” What a great slogan for a Thomas Pynchon reading group!

Other proponents of self-tracking stress its potential to improve our decision making. British scientist turned entrepreneur Stephen Wolfram—among other accomplishments, he built Wolfram Alpha, a “computational knowledge engine” once touted as a competitor to Google—promotes what he calls “personal analytics” (which is just a synonym for self-tracking). According to the *New York Times*, Wolfram has scanned 230,000 pages of paper documents; his medical test data, complete genome, GPS location tracks, and room-by-room motion sensor data are all ready to be analyzed. Wolfram believes that one possible application of “personal analytics” would be to track the combination of factors that make people creative in their everyday lives (he's also on the record saying that soon “people will watch their health in a way that's a little closer to the way that they watch their financial portfolios”).

Members of the Quantified Self movement may not always state this explicitly, but one hidden hope behind self-tracking is that numbers might eventually reveal some deeper inner truth about who we really are, what we really want, and where we really ought to be. The movement's fundamental assumption is that the numbers can reveal a core and stable self—if only we get the technology right. Thus, Wolf can write that “many of our problems come from simply lacking the instruments to understand who we are. . . . We lack both the physical and the mental apparatus to take stock of

ourselves. We need help from machines.” That the instruments and machines might also be pushing us in directions that we would normally avoid is conveniently omitted.

Wolf's is a double-click model of the self: you click the mouse or press the iPad screen, and a complete digital visualization of your real self pops up without any meditation. For Wolf, this fixed, coherent, and transcendental self is very much like what technology is for his partner in crime, Kevin Kelly: our true self has a voice, and it's trying to tell us a story; we just need to find the right set of apparatuses to hear it. Thus, only by attending to every single noise, by recording and visualizing all our wants, fears, and desires, can we aspire to rational action. Moreover, it would probably be irresponsible to act out in the world without first taking “stock of ourselves.” In his last major book, philosopher Bernard Williams, a vocal critic of utilitarianism and an admirer of Nietzsche, proposed that such seemingly rational demands for a comprehensive listing of all our thoughts, dreams, and aspirations are driven by the unhealthy goal of “total explicitness” that rests “on a misunderstanding of rationality, both personal and political.” Demands that “all my projects, purposes, and needs should be made, discursively and at once, considerations for me” must be resisted; instead, wrote Williams, “I must deliberate from what I am.” For Wolf, though, knowing “what I am” is an impossibility unless spreadsheets are involved.

The recent appeal of self-tracking can only be understood when viewed against the modern narcissistic quest for uniqueness and exceptionalism. Self-tracking—especially when done in public—is often just a by-product of attempts to show off and secure one's uniqueness in a world where suddenly everyone has a voice and is expected to say things that matter. In addition to all the practical benefits—both real and imaginary—self-tracking offers, it also allows adherents to identify—and cement by means of sharing—the most unique aspects of their individuality. Thus, the logic goes, if you are not unique, you are simply not measuring enough indicators; we might all be thinking the same thoughts and watching the same viral videos, but surely at least our feces are not identical.

If not words, then at least numbers will reassure us—and, more importantly, the world at large—that we are who we (or, rather,

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our profiles) say we are. Wolf hints at this very motivation when he writes that “personal data are ideally suited to a social life of sharing. You might not always have something to say, but you always have a number to report.” Self-tracking, then, is like blogging—only for shy people. In 2009, technology writer Bill Wasik published a *New York Times* op-ed where he argued that the Internet—well, “the Internet” really—is much like a hypercharged New York: it’s full of creative energy; everyone sees what everyone else is doing and tries to keep up. “The Internet,” for Wasik, is just one big city. He might be right, but in one important way, our new digital big city, looks more welcoming than New York: even if you’ve got nothing to say on arrival, you can still share your data and bask in your own exceptionalism.

The Ryanairation of Privacy

One can easily think of more tangible benefits of self-tracking, especially in the digital context. In fact, just drop “self-” from “self-tracking” and consider the many benefits of tracking. The main thing to remember here is that self-knowledge is never the ultimate goal. Nobody—not even Horace Fletcher or Larry Smarr—studies poop for aesthetic reasons; it’s usually done to generate better data for decision making about one’s health. Thus, with both tracking and self-tracking, the promise is that the data generated will yield some real benefits.

For example, many are persuaded by Google’s arguments that by monitoring our e-mail and searches, the company can serve us better—more personalized—ads. Or that by studying what we type in its browser’s search box, it can finish our queries for us. Thus, writes Slate’s Farhad Manjoo, “I’m not just tickled by Instant Pages as a feature. I also like the philosophy behind it—the idea that my software is analyzing what I do and adjusting its behavior accordingly. . . . Why doesn’t every other app [do that]?”

In a way, the rise of self-tracking might reverse the debate on privacy: instead of worrying about companies tracking what we do online, why not do the very opposite and lament that so much of what we do online is not yet recorded—thus not being used to improve our lives or at least traded on the market, earning us some

cash? After all, once users can self-track, they can decide what to do with their data—so concerns about privacy become concerns about finding the right market and charging the right price. It's not particularly surprising, then, that the World Economic Forum in Davos is already hosting discussions to explore how personal data can be made into a new "asset class" on a par with wheat or widgets. As a high-placed Bain & Company executive who led the Davos discussion put it, "We are trying to shift the focus from purely privacy to what we call property rights."

A recent column in the *Observer* illustrates how market logic can easily invade discussions of privacy. "The parasitism of corporations snooping on us could become a symbiosis, in which information is freely surrendered in exchange for something concrete: say a garden gnome. Or, you know, adverts that are actually useful because they offer things we want to buy and ways of doing so more cheaply," writes British actor David Mitchell (and even though he's a comedian, he's not joking around). But notice how quickly the column—and, mind you, this is the left-leaning *Observer*—recasts questions of rights (such as privacy) in purely market terms. "This is the difference between a market and a war. In a war, if the other side wants something you've got, you definitely want to withhold it. If that happens in a market, and if you can strike the right deal, it's an opportunity to make everyone better off." By this logic, of course, even torture is okay—provided the prisoners "strike the right deal" and are well compensated.

But if one rhetorical goal of the Quantified Self movement is to spell out all the losses that accrue once our personal data is locked up, its other rhetorical goal is to show that, in principle, privacy is possible too—as long we are willing to pay for it. This idea already informs the operations of many self-tracking communities. Daytum.com allows its more than 80,000 users to track all sorts of personal data—from how many miles they run to how many beers they drink—but everyone's data is automatically shared publicly—unless, of course, you want to shell out \$4 a month for a premium account and keep it private.

As Daytum's founder Nick Felton—he of the Feltron Annual Report—told *Forbes*, "If you want privacy, you have to pay for it. It's interesting to see what people choose to share publicly. Bathroom

visits, sexual activity, drug use.” Kevin Kelly, the cofounder of the Quantified Self movement, is convinced that this is what technology has wanted all along. “Privacy is mostly an illusion, but you’ll have as much of it as you want to pay for,” he told NPR. To borrow a term from political philosopher Glen Newey, this new ability to monetize privacy is yet another manifestation of the growing “ryanairation of social life”—named in honor of the infamous low-cost air carrier, which, in 2010, proposed charging customers even for bathroom visits (a fee that, to the relief of many, has yet to be charged in practice)—whereby once cash-free practices are broken down into severally billable units of account.

Under this new regime, it won’t be enough to shell out for processing our data in private; we’ll have to pay for proactively defending our online reputations as well. Defend from what exactly? Well, it might be something silly we did in the past—smoked pot at a college party where everyone had a smartphone—but it may also be something that lies beyond our control entirely: imagine a social-networking site leaking our private information, or Anonymous publicizing our membership on a hacked porn site, or a data-mining company drawing accurate inferences from disparate sources of data. This is where start-ups like Reputation.com come into picture; they promise to help clean up your online reputation—sometimes by cleverly manipulating search results and sometimes by asking site owners to take down damaging information by threatening litigation—but, of course, they charge hefty fees for their best work.

Those who can afford it probably do get wonderful service. In April 2011 the *New York Times* reported on how, during the economic collapse of 2008, investment bankers began using the services of such online specialists to protect their reputations. According to one New York-based image manager, “Some of these bankers were paying upwards of \$10,000 a month to try to hide their names online as they began appearing in the press.” Good for the bankers; bad for the rest of us. But what about those who have done nothing wrong but can’t pay? Will a data-rich economy create new forms of digital divide, where only the rich can afford to defend their online reputations? It’s also hard to overlook the fact that most reputation consultants have a direct interest in making everyone anxious about his or her reputation, for this is the only way to ensure stable business growth.

Silicon Valley visionaries like to imagine citizens as start-ups; thus, being constantly stressed out about one's reputation is seen as the normal cost of doing business. The goal is to get all of us off information welfare and into the information workforce, whereby we need to actively care for our online profiles and, if necessary, pay start-ups like Reputation.com for extra protection. That this might distract us from pursuing other important personal projects does not much matter. The benefit of transitioning to some kind of information welfare state, which will allow citizens to experiment and grow without risking their reputations, doesn't occur to our digital luminaries either.

Reid Hoffman, the founder of LinkedIn who fashions himself a digital philosopher, offers the best encapsulation of this ideology in his book with the telling title *The Start-Up of You: Adapt to the Future, Invest in Yourself, and Transform Your Career*. According to Hoffman, "You can think like a start-up, whoever you are and whatever you do." Thus, you need to live as if you were in permanent beta—"beta" is tech speak for software that is not yet ready—and "acknowledge that you have bugs, that there's new development to do on yourself, that you will need to adapt and evolve. . . . Permanent beta is essentially a lifelong commitment to continuous personal growth. Get busy livin', or get busy dyin'."

That our "bugs" might stem from lax or nonexistent laws, too much lobbying by the likes of LinkedIn, or various acts of mischief by Anonymous is not even alluded to; everything happens solely as a result of your own actions, never because of the environment. Hence, we must work diligently to fix all our bugs; self-tracking is just one step toward identifying them. Of course, permanent anxiety has always been one of Silicon Valley's favorite assets, but something more sinister is happening here: macro-level, reform-based solutions to problems are discarded in favor of carefully delineated action by atomized individuals.

The idea that our personal data—whether it's self-tracked or recorded by some other digital intermediary—can be profitably sold has also inspired several start-ups, known as "digital lockers," that want to quell public fears over data loss or accidental disclosures and enable full consumer participation in the reputation marketplace. Thus, a start-up called Personal.com has raised \$7.6 million

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in venture funding based on the idea that consumers who are allowed to “curate” what data about themselves are made available to select marketers might end up with both more relevant ads and better discounts.

In a 2011 interview with the *San Jose Mercury News*, Personal’s chief executive Shane Green invoked a hypothetical consumer who chooses to make specific data, such as favorite brands, available to advertisers. In return, the consumer gets 5 to 15 percent of a purchase price back, with Personal taking a cut of that rebate. Everybody wins. Jason Cavnar, cofounder of Singly, another digital locker start-up, promises many nonfinancial benefits as well. “Imagine,” he says, “being able to combine all of your check-in data from Facebook and Foursquare with restaurants you have used a credit card at, and combining that with a list of reviews from Yelp to see what highly rated restaurants near you that you have not yet tried.” If consumers can collect this data themselves—or authorize companies to collect it on their behalf—all the better.

The Great Unraveling

Silicon Valley is not making empty promises here: “digital lockers” will most likely ensure that we get better discounts. This rhetoric of empowerment is not disingenuous, at least not all of it. But to think of these changes solely in terms of how they empower individual consumers would be to miss some broader unintended consequences of creating more incentives for self-disclosure. Once we put on our technostructuralist hat, look beyond the individual consumer, and investigate how self-tracking and data lockers might transform the very sociopolitical environments in which such consumers go about their business, we are likely to see a very different picture.

Disclosure decisions are tricky because my decision to track and release some information about myself has implications for many other people who may not even know about data lockers or self-tracking. How so? If I choose to track and publicize my health, and you choose not to, then sooner or later your decision to do nothing might be seen as tacit acknowledgment that you have

something to hide. Thus, when some members of society choose to self-track and self-disclose—and presumably those who do choose to self-disclose have little to fear from disclosure—it becomes much harder, if not outright impossible, for everyone (including those who'd rather keep their data to themselves) not to self-disclose.

Think of it this way: all of us have a right not to have a cell phone or a Facebook profile. But that right means little in a society where almost everyone has both those things, for people without cell phones or Facebook profiles are presumed to be weird outliers with their own reasons for staying low—and those reasons can't be good, can they? Law enforcement agencies already view those without cell phones as potential terrorists or drug dealers—this, if anything, turns your “right” to keep away from certain technologies into a joke. A similar set of interpretations has already emerged around the digital refuseniks who stubbornly resist opening a Facebook account.

If just a few years ago, they were seen as Luddites or, at best, as deeply spiritual individuals who didn't want to bother with the hassle of social networking, today such people are portrayed as suspicious creeps who either have no social life to report or are hiding some dark past from public view. This suspicion of Facebook holdouts permeates our public culture deeply. Thus, following the Aurora shootings in June 2012, the German newspaper *Der Tagesspiegel* pointed out that neither James Holmes, the Aurora gunman, nor the Norwegian mass murderer Anders Behring Breivik had Facebook accounts, implying that the absence of any Facebook activity might itself indicate that a person has problems. The same sentiment was echoed by Slate's columnist Farhad Manjoo, who suggested, “If you are going out with someone and they don't have a Facebook profile, you should be suspicious.”

We'll see similar trends when it comes to the sharing of information generated through self-tracking. All this sharing will in turn lead to the unraveling of privacy. No amount of privacy-enhancing technologies or tighter laws—the hallmarks of traditional privacy activism—will be of much help here precisely because there will be good reasons to share rather than protect our data. Perfectly secure browsers and smartphones will mean little if their users suspect

that maintaining their privacy is a major liability. Once the motivation for keeping one's data private goes away, all the conventional responses to the privacy crisis become inadequate.

Scott Peppet, a legal scholar at the University of Colorado Law School, argues that the proliferation of self-tracking will force us to create our own "personal prospectus," an assortment of various digital lockers populated by our self-tracked and verified information. Our digital prospectus will then mediate all our interactions with fellow citizens, firms, and public institutions, which, armed with access to all this data, will continue their transition from exclusionary vibes to the bouncer's right as their preferred discrimination strategy. Peppet musters a number of realistic examples to show just how empowering the idea of the personal prospectus might feel to consumers: "Want to price my health insurance premium? Let me share with you my FitBit data. Want to price my car rental or car insurance? Let me share with you my regular car's 'black box' data to prove I am a safe driver. Want me to prove I will be a diligent, responsible employee? Let me share with you my real time blood alcohol content, how carefully I manage my diabetes, or my lifelong productivity records."

In other words, there are very good reasons why those with excellent health, impressive driving habits, and Stakhanovite productivity will be excited to track and share their data. But what about the poor and the sick? What about those who don't have the time or the stamina—which those who work three daily jobs to stay afloat might lack—to engage in self-tracking? And what if the poor and the sick do embrace self-monitoring? What are they likely to discover? That they eat food high in calories and saturated fat and that they never "check in" at their local gym because the membership fees are too high or because they never have the time with all the odd jobs they are working? The danger here is quite obvious: if you are well and well-off, self-monitoring will only make things better for you. If you are none of those things, the personal prospectus could make your life much more difficult, with higher insurance premiums, fewer discounts, and limited employment prospects.

Several recent efforts to make the personal prospectus even more comprehensive hint at what we can expect in the near future; Peppet's concerns seem fully justified. Smartphones already offer

a panoply of applications for self-diagnosis, which, if only indirectly, also create a trove of health data that can be put to good use (and it's not just smartphones: a recent study found that consumer-grade devices monitoring one's health will account for more than 80 percent of wireless devices in 2016). As Christopher Steiner notes in *Automate This*, an iPhone app from the Dutch technology company Philips already knows how to take vital measurements for whoever happens to be looking at its camera. The app can then figure out—with a high degree of accuracy—users' heart and breathing rates by examining tiny color changes in their faces and closely examining their chest movements, respectively. As Steiner notes, "Upcoming apps from Philips and other tech companies will allow for instant measurement of blood pressure, temperature, blood oxygenation levels, and signs of concussion." The next step will be to get insurance companies to see this data and reward the healthy self-trackers and punish everyone else.

Car insurers are already exploring ways to profit from the self-tracking craze. Thus, Aviva, the world's sixth-largest insurance company, has been testing a smartphone app called RateMyDrive, which monitors how well motorists deal with acceleration, braking, and cornering. After driving for two hundred miles, drivers get an individual score that, in turn, determines their insurance premiums; "safe" drivers can expect to shed as much as 20 percent off their premiums. There is no need to install a "black box" in your car—your iPhone takes care of everything. Another novel solution is to turn your car into a moving surveillance castle, outfit it with cameras and other sensors, and use all this data to achieve better fuel efficiency and lower accident rates. A San Diego start-up called SmartDrive Systems Inc. does just that. When sudden braking or swerving triggers its sensors, the system starts recording video and other data. Having used this technology to assess more than 44 million unsafe-driving incidents, the company claims it can improve fuel efficiency by 20 percent and reduce collisions by up to 80 percent.

Most interestingly, SmartDrive claims that the recordings allow many drivers to prove their innocence and avoid blame for accidents they didn't cause. In a world where you can record everything—if only to preempt complaints or false accusations—you will record

everything just to be on the safe side. Our digital visionaries constantly celebrate the virtues of such proactive tracking and sharing—with constant releases of data becoming a potent form of reputation defense. Cue Jeff Jarvis, who, true to form, declares that “the way to affect your reputation is often to share more, not less. The best solution is to be yourself. If that makes you uneasy, talk with your shrink. Better yet, blog about it.” But will you be able to afford a shrink once your insurance company starts reading your tell-all blog? Jarvis doesn’t say.

As more people embrace this track-and-share mentality, those who refuse to participate in this great party will bear the brunt of the social costs. This is why we need a debate about the ethics of self-tracking; a decision to track and publicize a certain aspect of our daily lives cannot arise solely from our preoccupation with improving our own well-being—just as a decision about how much electricity or water to consume in our households cannot arise solely from our ability to pay for them or our material needs. As long as privacy is viewed as an arch-important enabler of human flourishing—an idea that many in Silicon Valley would surely contest—my decision to self-track, whatever great benefits it might confer on me personally, ought to be subjected to a much more complex moral evaluation than the Quantified Self evangelists have acknowledged so far. Scott Peppet puts his finger on the problem when he writes, “Your choice to quantify yourself (for personal preference or profit) thus has deep implications if it necessitates my ‘choice’ to quantify myself under the pressure of unraveling. What if I just wasn’t the sort of person who wanted to know all of this real-time data about myself, but we evolve an economy that requires such measurement? What if quantification is anathema to my aesthetic or psychological makeup; what if it conflicts with the internal architecture around which I have constructed my identity and way of knowing?”

As Peppet also points out, it’s important to ask “what sorts of people—artists? academics? writers?—will be most denuded or excluded by such a metric-based world,” for it seems there will be many such metrics. For example, rare is the writer with a perfect credit score; find ten more such indicators—willingly embraced by the majority—and no sane human being will ever risk dabbling in writing. Up till now, the imperfections of our socioeconomic

system—caused by, among other factors, the lack of adequate data—have led to a lot of barely justifiable risk taking, which has in turn fuelled cultural and social innovation. It would be a genuine loss if the advent of the personal prospectus made such risk taking less likely. The potential unraveling of privacy is not the only reason to worry about self-tracking, however. In fact, to worry about the phenomenon's secondary effects might very well already concede too much to the Quantified Self enthusiasts. Understanding the structural limitations of quantification schemes—especially zooming in on what they don't reveal in their quest to reveal everything—might provide another fruitful avenue for critique.

Between Nietzsche and Condorcet

Friedrich Nietzsche was one of the first to rebel against the quantification fetish that he saw present in the then popular utilitarian philosophy advocated by the likes of Francis Galton and Herbert Spencer (whom Nietzsche charmingly caricatures in his writings). In *The Gay Science*, Nietzsche bemoaned “the faith in a world that is supposed to have its equivalent and its measure in human thought and human valuations—a ‘world of truth’ that can be mastered completely and forever with the aid of our square little reason.” Nietzsche was having none of it: “What? Do we really want to permit existence to be degraded for us like this—reduced to a mere exercise for a calculator and an indoor diversion for mathematicians? Above all, one should not wish to divest existence of its rich ambiguity that is a dictate of good taste, gentlemen, the taste of reverence for everything that lies beyond your horizon.”

In his idiosyncratic way, Nietzsche offered a piercing critique of information reductionism, the naïve belief so popular with the Silicon Valley crowd that more information is always better. That one can collect and muster more measurements of a given phenomenon, Nietzsche reasoned, does not imply progress, for there may be other, better ways of talking about that phenomenon that do not easily lend themselves to quantitative measurements. “That the only justifiable interpretation of the world should be one in which *you* are justified because one can continue to work and do research scientifically in *your* sense (you really mean, mechanistically?)—an

interpretation that permits counting, calculating, weighing, seeing, and touching, and nothing more—that is a crudity and naïveté, assuming that it is not a mental illness, an idiocy.”

Most perceptively, Nietzsche understood that quantifiable information might be nothing but low-hanging fruit that is easy to pick but often thwarts more ambitious, more sustained efforts at understanding. “Would it not be rather probable that, conversely, precisely the most superficial and external aspect of existence—what is most apparent, its skin and sensualization—would be grasped first—and might even be the only thing that allowed itself to be grasped?” he wondered.

As if responding to Leibniz—who once wrote that music is an “occult exercise in mathematics performed by a mind unconscious of the fact that it is counting”—Nietzsche pointed out that in areas like art, quantitative measures are simply inappropriate. “Assuming that one estimated the value of a piece of music according to how much of it could be counted, calculated, and expressed in formulas: how absurd would such a ‘scientific’ estimation of music be! What would one have comprehended, understood, grasped of it? Nothing, really nothing of what is ‘music’ in it!” he wrote.

What would Nietzsche make of Google’s Eric Schmidt, who actually seems to entertain the idea that one day Google might excel at algorithmic aesthetics? “Our mission is to get the best answer,” said Schmidt in response to an interview question about why Google increasingly provides answers and not just search results. “So if you say, ‘I want the best music from Lady Gaga,’ and if we could algorithmically compute that answer, I would want to give it to you right then and there, subject to rules and copyright and all of that.” Sure, there are some “ifs” involved here, but it doesn’t sound as if Schmidt believes this job to be categorically impossible; it’s all a matter of the right algorithms and enough computing power. “Best music from Lady Gaga” is just something objective that is out there, to be discovered by Google.

Nietzsche’s conclusion about calculations and measurements was bitter but powerful: “An essentially mechanical world would be an essentially meaningless world.” Now, compare this with Kevin Kelly’s rhetorical attempt to exclude questions of meaning as something that the Quantified Self crowd ought even worry about:

“[Our critics say that] only intangibles like meaningful happiness count. Meaningfulness is very hard to measure, which makes it very hard to optimize. So far anything we can quantify has been getting better over the long term.”

The last part, of course, is typical Silicon Valley nonsense: what about income inequality, or carbon emissions, or obesity rates in America? Kelly's positivism would shock even Auguste Comte. But proclamations like Kelly's also tap into the long-running scientific tradition—so astutely documented by historian Theodore Porter in his *Trust in Numbers*—that celebrates measurement as seemingly objective and consensus boosting. Alas, as with almost everything else they say, our digital boosters are often blind to this history. Kelly's logic rests on Lord Kelvin's famous dictum postulated in the nineteenth century: “If you can not measure it, you can not improve it.” A century before Kelvin, the Marquis de Condorcet was already touting the benefits of measurement: “If this evidence cannot be weighted and measured, and if these effects cannot be subjected to precise measurement, then we cannot know exactly how much good or evil they contain.” In this sense, the Quantified Self does continue in a formidable intellectual tradition, but it also suffers from the numerous weaknesses that bothered Nietzsche and many of his followers: Kelly, like Kelvin and Condorcet, has disturbingly little to say about the “intangibles”—both the ethics and aesthetics—and this, if anything, is a good reason to worry about this new movement.

Even when it comes to tangibles, however, the situation is much murkier than our philosophers of tracking let on. Gary Wolf once wrote that one of his main inspirations for the Quantified Self was the idea of the “macroscope,” which, following entrepreneur Gilman Tolle, he defines as “a technological system that radically increases our ability to gather data in nature, and to analyze it for meaning.” The naïve idea that data exists “in nature” and can simply be gathered or discovered without our having to account for our data-gathering tools, the knowledge systems that underpin them, and multiple layers of human interpretation is one of the defining features of information reductionism. For data to be gathered, someone first needs to decide—or defer to someone else's judgment about—what is being measured, in what manner, with

what devices, and to what purpose. How we choose to slice up reality, what elements we highlight, and what elements we shade will greatly influence what kinds of measurements we generate.

One of the great dangers of the Quantified Self movement is that, in their belief in the natural origins of data, adherents will not question—or even reflect upon—the appropriateness of the measurement schemes that underwrite their data-gathering efforts. For Wolf, the world is black and white: there are the good guys who measure things, the heirs of Condorcet and Kelvin, and the bad, backward guys who don't. Which camp do you want to be in? In its simplicity, such rhetoric is similar to Kevin Kelly's musings on technology: you can either be a technophile like him or you can be the Unabomber (Kelly dedicates a chapter of his book to an imaginary dialogue with him). No other way of thinking about technology is possible.

So, just as Kelly defends technology, Wolf also passionately defends quantification. Both do it at such a level of generality that they lose sight of the sheer diversity of practices and approaches within each of these categories. Instead we need to draw out cases in which we must make highly consequential, painful choices over multiple ways to measure and quantify a certain phenomenon—including possibly refusing to quantify it altogether. In other words, we need a rich account of the very ethics of quantification. As sociologists Wendy Nelson Espeland and Mitchell L. Stevens observe, "An ethics of quantification should investigate how the world is made by measures but should strongly reject any conceit, scientific or otherwise, that measurement provides privileged or exclusive access to the real." Attempts at quantification are quite often attempts at simplification—and simplification is anything but apolitical, especially when competing interpretations of a problem are discarded in favor of something measurable and manageable.

Compare this concern with ethics of quantification to the highly unreflective approach that Wolf pursues in his manifesto. He writes, "It is normal to seek data. A fetish for numbers is the defining trait of the modern manager. Corporate executives facing down hostile shareholders load their pockets full of numbers. So do politicians on the hustings, doctors counseling patients and fans

abusing their local sports franchise on talk radio.” Well, yes, all these entities seek data, but then, there are different ways to go about seeking data, some of them better than others—and, in a few cases, it may be better not to surround oneself with numbers at all. After all, Enron, Arthur Andersen, and Lehman Brothers all had managers and shareholders; the much-hated Bush-era No Child Left Behind Act—which tied school funding to students’ performance on tests—is suffused with a fetish for numbers; and doctors counseling patients regularly have different opinions even when they look at the same data.

From Nutritionism to Educationism

Celebrating quantification in the abstract, away from the context of its use, is a pointless exercise. Do we really want people to self-track just because “quantification” is cool or because a handful of Enlightenment thinkers said we should? It is like asking people—following Kevin Kelly’s lead—to always celebrate technology in the abstract, regardless of how destructive its individual applications, if only to defy the Unabomber. Instead, we need to establish when quantification schemes are inappropriate. When do they suppress conflicting interpretations of reality? What do they conceal and make invisible, and is this something we can afford to lose sight of? How might they be invoked in the name of seemingly unrelated political projects? This exercise will be hard to complete without posing the thorny questions of meaning—which the Quantified Self movement has mostly avoided so far.

Robert Crease, author of *World in the Balance: The Historic Quest for an Absolute System of Measurement*, laments that “we tend to look away too much from what we are measuring, and why we are measuring, to the measuring itself.” To make up for this deficiency, Crease urges us to focus on dissatisfactions, on what measuring does not deliver. “And we have to address these dissatisfactions,” he notes, “not by discarding the measures we have and seeking to find newer and better ones, for these, too, will also eventually turn out not to do what we want and eventually need to be renounced, nor by assuming that what we are after lies ‘beyond’

measuring.” Instead, argues Crease, “we . . . need to keep reminding ourselves of the human purposes that led us to create [the measurement] in the first place—and where, if at all, it interferes with any of these purposes.” How can we acknowledge that the No Child Left Behind Act, while technically inspired by the same quantification measures that would have excited Condorcet, might actually be bad for education, even if it’s marginally good—a big if, it seems—for test scores? We must first ask what we value about education—and this is primarily a question about the appropriateness of its ends, not the efficiency of its means.

Alas, education is one domain where it’s easy to fall for the shallow, celebratory accounts of the benefits offered by quantification. Take a site like Rate My Professors, where students can opine about their classes and the instructors teaching them and rank them on a number of criteria. Even if we leave aside the obvious concern about introducing the consumerist mentality into education, it’s worth asking just how the very process of ranking according to a number of set categories might convince students that those are the right criteria for assessing their learning experience. These are not just neutral, objective ways to measure teaching; they also shape and create norms according to which all future teaching will be assessed.

Rate My Professors offers four criteria: helpfulness, clarity, easiness, and hotness. The last is there mostly for humorous reasons, but what about others? Why should “easiness” be of concern in evaluating how we learn? The world out there is a complex place, and those who want “easiness” can always gorge themselves on TED talks. But even “clarity” has attracted the ire of many critics, primarily for creating the wrong impression that all complex ideas can and should be crammed into PowerPoint presentations. As writer Matthew Crawford points out, “Certainly clarity is desirable in a lecture, and the absence of it is often nothing but the professor’s own confusion or his failure to extricate himself from the tertiary quarrels and jargon of his discipline. Yet the demand for clarity is often the demand for getting to the point, and this presumes that there is a bottom line. Busy executives demand clarity from those who submit reports. Undergraduates are busy too.” Any learning enterprise that begins with the assumption that ideas have a bottom

line will succeed in churning out the next generation of Bain consultants, but will it produce any talented essayists?

Or consider the kinds of quantification enabled by academic sites like Google Scholar and Mendeley. The latter draws on a global community of 1.8 million academics to keep track of 250 million research documents and has recently moved to provide additional information about who quotes whom, with what frequency, on what subjects, and so forth. On the whole, this looks like a good thing: Why not learn more about how ideas circulate, especially when universities already use other metrics, like the impact factor? Better data, the hope is, will ultimately improve efficiency. Cue Mendeley's cofounder and CEO, who believes that his company's "data is now helping some of the world's best universities work more efficiently and get to life-changing discoveries faster."

Viewed in the abstract, there is much to admire about this new layer of knowledge. But viewed in the context of other trends in today's academia, its effects no longer look unambiguously positive. First, such data feeds the ongoing efforts (e.g., by the British government) to tie funding for academic work to specific, easily measurable outputs—making it quite hard to receive funding if you teach and research classics. Second, whether one climbs up the academic ladder is already heavily determined by the ability to get published and quoted by others (and thus boost one's "impact-factor ranking"); this too has had rather mixed effects on the quality of scholarship produced. A recent *Wall Street Journal* investigation of how obsession with the impact factor has transformed scholarship reveals that some editors of academic journals might even be rejecting solid articles only because they do not quote enough papers already published in the editors' own journals. Or consider an even more outrageous episode. In an April 2012 post—provocatively titled "The Emergence of a Citation Cartel"—The Scholarly Kitchen blog called attention to a 2010 review article that recently appeared in a journal called *Medical Science Monitor*. The article cited 490 articles; 445 of those appeared in another journal, *Cell Transportation*. Partly as a result of this article, *Cell Transportation's* impact factor rose by 21 percent between 2009 and 2010. This wouldn't look very suspicious if the two journals didn't have so much in

common: of the four editors who worked on the *Medical Science Monitor* article, three also served on the editorial board of *Cell Transportation*. It's a win-win for everyone but scholarship.

Once we start factoring in such considerations—working in the technostructuralist mode, keenly aware of the trends and practices transforming our chosen field—we are likely to think twice about the virtues of “efficiency” that would accompany Mendeleev's new tracking system. It's quite possible that it seeks to offer a great solution to a minor problem while exacerbating many grander problems along the way.

Quantification schemes get even trickier once they are based on seemingly universal and timeless scientific findings. Systems of knowledge guiding public policy tend to be unstable or incomplete; their conclusions—especially when expressed in the quantified form—usually imply hundreds of footnotes and qualifications, which can be studied in order to restore the kinds of complexity lost in the process of producing formulas and numbers. In our daily lives, we somehow get by, even if we disregard many of these footnotes. Simply knowing the temperature outside is often enough to decide what to wear, even if we know nothing about how the system of measuring temperature came about and what simplifications it rests on. Such a heuristic is possible only because the input-output relationship in this particular case is so straightforward: if the temperature is too low, we get cold; if it's too high, we get hot. Rocket science it isn't.

But the new frontiers of solutionism inspired by self-tracking are anything but straightforward. Dieting, for example, might seem relatively simple. Eat foods rich in calories and get fat; eat low-calorie foods and get slim. The simplicity of this theory explains the popularity of various sites and apps that measure the calorie count of the foods we eat. A smartphone app called Meal Snap allows you to take a photo of the food on your plate and see an estimate of its calorie count. FoodScanner, another smartphone app, allows you snap a photo of the barcode on the food's package, recognize the food, and see its calorie count along with some other nutritional information. Restaurant Calorie Counter contains information about more than 15,000 food items from over one hundred top restaurant chains, allowing us to easily generate a calorie count when eating out.

All of these sound like great apps—in the right hands. Focusing on calories—just because they are the easiest to count—is a somewhat defective way to think about nutrition and might even lead to dieting disorders. There is little agreement in the dieting community as to what exactly causes obesity. If it's the quantity of the food we eat, then calorie count might be a good approximation. However, if it's the quality, then we also need to look at the composition of the food we eat and perhaps police our consumption of foods that contain carbohydrates and sugar. For example, the *New York Times* recently reported on a high-profile study in the *Journal of the American Medical Association* that found that “the nutrient composition of the diet can trigger the predisposition to get fat, independent of the calories consumed.” Now carbohydrates can be measured as well—through something called the glycemic index—but this shouldn't much bother us here.

Whether they track calories or carbohydrates, the apps of the Quantified Self do not, strictly speaking, measure nutrition; they measure, well, calories and carbohydrates. How each of those indicators translates into weight gain and weight loss—not to mention the enjoyment one derives from eating—is a far more circuitous process than deciding whether to wear a sweater based on what the thermometer tells us about the weather outside. Of course, it's possible that obsession with self-tracking and dieting might nudge some enthusiasts to read up on nutrition and develop better insights into how nutrition relates to health. But it's unrealistic to expect that of all self-trackers. In fact, the majority might feel too comfortable with their tools and stop investigating altogether.

In other words, when people start with confused ideas about nutrients, minerals, and vitamins, the ability to count within these seemingly unproblematic categories is not an unmitigated blessing. Some critics even proclaim that the world of dietary education suffers from its own ideology of information reductionism. Sociologist of science Gyorgy Scrinis calls such a tendency to think of food primarily in terms of the nutrients it contains “nutritionism”; anyone obsessed with eating foods that are only “low fat” or “reduced fat” is very likely under the sway of this ideology.

For Scrinis, there's nothing wrong with generating extensive knowledge about individual nutrients and using that knowledge

in conjunction with other modes of encountering food, whereby we simply add what we know about individual nutrients to what we know about the quality of the food in question, how it was produced, how many additives it contains, how individual nutrients tie together in producing the overall nutrient profile of the food, and so on. But such complementarity is only rarely achieved; in most cases, the ease of measuring, say, fat tends to establish it as the indicator to watch for. The food industry, not surprisingly, is all too happy to oblige: it's not uncommon to see companies peddling nonfat milk that supplements what the product lacks in fat with an extra dose of corn syrup. But, of course, "no fat, high sugar" doesn't make for a very sexy food label.

There is no reason why the food industry would feel threatened by self-trackers: as long as such schemes are tied to just one popular indicator, both the manufacturing and the marketing processes can be reconfigured accordingly. Scrinis even suggests that the "shift to nutrient-level language and dietary advice arguably favored the interests of the food industry over the dietary advice of nutrition experts." Thus the industry easily exploited the reductive focus on fat, as it started substituting fat with highly processed and reconstituted ingredients of rather dubious nutritional value. Scrinis further notes that this "enabled the lay public to interpret their consumption patterns in these nutricentric terms and to seek out nutritionally engineered versions of what they were already eating. Rather than consuming less meat or dairy products, individuals could select 'lean' meats and low-fat milk or switch from red meat to white meat." Likewise, it allowed the public to continue consuming processed and fast foods—albeit now in a somewhat modified, fat-unfriendly form—rather than consuming less of these products.

In his critique of nutritionism, Scrinis too links its rise to the ease and appeal of quantification. Thus, he notes, one can discern a trend arising in the late nineteenth century whereby "nutrients, food components, or biomarkers—such as saturated fats, kilojoules, the glycemic index, and the body mass index—are abstracted out of the context of foods, diets, and bodily processes. Removed from their broader cultural and ecological ambits, they come to represent the definitive truth about the relationship between food and bodily

health.” Scrinis’s critique of nutritionism is not unlike Nietzsche’s critique of scientists who naïvely believed they could rank music via mathematics. Nutrition literacy cannot be reduced to a simple formula; it requires exercising critical thinking—and various self-tracking schemes, in a very perverse way, seek to free us from thinking about food altogether. This flight from thinking and the urge to replace human judgments with timeless truths produced by algorithms is the underlying driving force of solutionism. Bruno Latour distinguishes between “matters of facts,” the old unrealistic way of presenting all knowledge claims as stable, natural, and apolitical, and “matters of concern,” a more realistic mode that recognizes that knowledge claims are usually partial and reflect a particular set of problems, interests, and agendas. For Latour, one way to reform our political system is to acknowledge that knowledge is made of matters of concern and to identify all those affected by such matters; the proliferation of self-tracking—and the displacement of thinking by numbers—risks forever grounding us in the matters-of-fact paradigm.

Once we abandon thinking for optimizing, it becomes much more difficult not only to enact but to actually imagine possible reforms of the system being “measured” and “tracked.” One potential problem with quantification is that it encourages the government not to bother with painful structural changes and simply to delegate all problem solving to citizens. Why bother with regulating highly processed foods or improving access to farmers markets and prohibiting fast-food chains from advertising to youngsters? After all, we can simply empower individual citizens to monitor how many calories they consume and not bother with any of these initiatives, pretending that obesity is just the result of weak-willed individuals ignorant of what they are eating. Once it becomes complicit in lending support to simplistic political ideologies of individual responsibility, self-tracking blocks the kind of ongoing self-reflective inquiry that John Dewey held as central to democratic life.

It’s this imperialistic streak of quantification—its propensity to displace other meaningful and possibly intangible ways of talking about a phenomenon—that is so troubling. In the hands of enthusiastic and possibly well-meaning self-trackers, food becomes just another way of minimizing the risks of getting sick rather than

To Save Everything, Click Here

a way of enjoying our limited time on this planet. Will the excessive emphasis on information that nutritionism traffics in eventually displace other criteria by which we might want to judge food? Of course, self-trackers would assure us that this new information will only complement what we already know; in reality, however, it will most likely displace—rather than complement—other criteria.

Why this would be the case is not so hard to grasp. One of the advantages gained through quantification is to make the problem at hand easier to handle; once it's expressed in numbers, we can discuss how it changes over time, measure how other factors might be influencing it, and so forth. Solutionism and quantification are thus inherently linked. In his great work *Seeking like a State*, political scientist James Scott writes that “certain forms of knowledge and control require a narrowing of vision . . . [which] brings into sharp focus certain limited aspects of an otherwise far more complex and unwieldy reality. This very simplification, in turn, makes the phenomenon at the center of the field of vision more legible and hence more susceptible to careful measurement and calculation.” To limit the damage that solutionism can cause, then, one must find ways to restore some of the alternative perspectives effaced by this “narrowing of vision.”

The Imperialism of Numbers

Ivan Illich, writing before the advent of smartphones but after the ideas from cybernetics and systems theory had already penetrated the public debate, noticed a fundamental shift in how his contemporaries thought about needs, desires, and necessities. For Illich, necessities and desires are fixed: we have to make tough moral decisions to abstain. Needs, however, are an entirely modern creation; we treat them as flexible—perhaps the influence of Madison Avenue?—and believe that they can be identified (either through quantification or greater self-introspection). Thus, the very project of “meeting our needs” doesn't strike us as moral in the least. This is how Illich put it in a 1987 interview with the Canadian broadcaster CBC, foreshadowing some of the pathologies of self-tracking:

A student was here last week. I wanted to offer her a second glass of the cider that you buy from the Amish around here, and I said, "This is good cider, have some." "Oh, no," she said, "my sugar requirements are met for today. I don't want to get into a sugar high." The idea that all people have specifiable needs which can be identified and classified and then ought to be satisfied represents a break with a very different perception of the human condition, a traditional perception of the human condition which took for granted that some things are necessary and can't be changed but must be accepted. In this traditional view the cultivation of desire and the regulation of desire in the context of necessity was the principal personal ethical and moral task for everyone, and for the community. Needs, therefore, are neither necessities that cannot be changed, nor desires that can't ever be satisfied. . . . Needs . . . result when technique is accepted as a means to change, to abolish, the necessities which the human condition imposes.

That last line—about abolishing the necessities imposed by the human condition—might sound gloomy and pessimistic, but it fits quite nicely with the broader critique of solutionism offered in this book: limits—and what are "necessities" if not limits?—can be productive and even conducive to human flourishing. Obstacles and barriers create the conditions in which our very humanity can come into existence. As literary critic Terry Eagleton once put it, "Being human . . . is something you have to get good at, like playing the tuba or tolerating bores at sherry parties." Remove the bores and replace the tuba with a self-tracking app, and you shrink the space in which our humanity can emerge. But, more broadly, the problem with the needs discourse is that the young lady who refuses the cider seems to believe that her moral compass is exhausted by her easily measurable and quantifiable needs—that is, how much sugar she consumes on a daily basis. That she might have a moral obligation—for example, to be polite to her professor and simply accept the drink—or that she might actually derive great sensual pleasure from drinking the cider doesn't naturally occur to her.

Illich probably wouldn't be surprised by the quantification predicaments we face today. Will we all end up eating liquid paste that meets all of the demands of nutritionism but lacks the texture, beauty, and aroma of a well-prepared meal? Technology journalist Greg Beato, writing in the libertarian magazine *Reason*, hints at what this heavily quantified future might entail—and not just in the context of nutrition but in other pursuits as well. He writes, “Soon, we’ll know if the sea urchin panna cotta at the French Laundry inspires a greater leap in heart rate than the quail egg with caviar and cedar smoke at The Ritz-Carlton. We’ll know which yoga teacher’s students sleep most soundly at night. We’ll know which activity is most likely to lead to sex on a first date—an art gallery opening or a night at the bowling alley. Suddenly, all the old measures that have been used to determine value and satisfaction will no longer be quite as relevant.”

Perhaps this is how aesthetics was meant to end, with a bunch of enthusiastic devotees of the Quantified Self movement comparing notes on whether the nudes of Picasso or Degas generate longer erections. Human experience, run through the quantification mill, is reduced to little more than a stream of silent and mind-numbing bytes, a running digital commentary on our never-ending quest for a perfect genetic makeup, a perfect credit score, a perfect mating partner. Just as some clever investment bankers succumb to the functionalist temptation and buy thousands of never-to-be-read books to make their homes look “literary”—but what exactly is “literary” about homes where nothing is ever read?—we’ll be making our selves look healthy or even artistically inclined through some rough combination of quick technological fixes that pay little heed to the ideals of health or art that we purportedly aspire to cultivate.

Steven Talbott, a technology critic in the deeply spiritual tradition of Jacques Ellul, correctly observes that “we have invested only certain automatic, mechanical, and computational aspects of our intelligence in the equipment of the digital age, and it is these aspects of ourselves that are in turn reinforced by the external apparatus. In other words, you see here what engineers will insist on calling a ‘positive feedback loop,’ a loop almost guaranteeing one-sidedness in our intelligent functioning.” We ought not to be as

pessimistic—the last chapter of this book will show that digital technologies can help awaken us from the ethical and aesthetic slumber we've been enjoying for far too long—but the gist of Talbot's assertion is right: we have to watch out for positive feedback loops.

Why do so many people find the vision of a fully quantified world so appealing, even liberating? To *Reason's* Greg Beato, all the terrifying trends he identifies still point to some kind of happy end: once we know everything there is to know about the quail egg on offer at the Ritz-Carlton, marketing will be dead and objectivity will triumph. "Branding, marketing, and even qualitative customer reviews will give way to reports based on blood pressure rates, galvanic skin response, and quantified self-esteem. Instead of thinking with our flighty, emotional, easy-to-manipulate brains, we'll be feeling with our rational, measurable, hard-to-manipulate guts, crowning victors and condemning also-rans to failure based on what truly satisfies us most." This seems like geek think at its worst, blind to how power operates. Even if this utopia happens, all the marketing budgets will simply be spent on arguing which way of measuring things is more objective or natural or true. Instead of brands telling us that they all foster creativity, companies will compete to prove that their own brand of creativity—the one on which they get top marks—matters the most. This will only fuel the already pervasive feelings of anxiety and distrust that animate modern society.

Suppose for a minute that quantification won't destroy marketing but will instead allow corporations to push their products even more aggressively while also enjoying the anonymity defense that self-tracking gives them. Marissa Mayer, Yahoo!'s CEO and a former Google executive, talks of "contextual discovery," where search engines can, by studying what kind of information users seek online, supply this information proactively, before users even ask. Likewise, Mayer's former boss, Eric Schmidt, likes to talk about the idea of autonomous search—where our smartphones, by closely monitoring what we do, can also quietly perform related searches in the background. Schmidt gives an interesting example: "When I walk down the streets of Berlin . . . I want . . . my smartphone to be doing searches constantly. 'Did you know? Did you know? Did you know? Did you know?' This occurred here. This occurred

there.’ Because it knows who I am. It knows what I care about. It knows roughly where I am. So this notion of autonomous search—this ability to tell me things I didn’t know but am probably very interested in is the next great stage . . . of search.”

Well, this sounds great for tourism, even though it would probably destroy the tourism industry, as Google would become the ultimate tour guide for everything. But consider other applications of autonomous search. Suppose Google—say, through its magic glasses—knows that you are feeling down and that, in order to keep your mood intact (perhaps to compensate for the sad phone call you’ve just had from your ex), you need to see a painting by Renoir. Well, Google doesn’t exactly “know” it; it knows only that you are currently missing 124 units of “art” and that, according to Google’s own measurement system, Renoir’s paintings happen to average in the 120s. You see the picture and—boom!—your mood stays intact. Does it turn you into an art lover? Does it expand your horizons? Or would such utilitarian attempts to feed art, as if it were self-help literature, demean art as such?

Such deference to autonomous systems—and make no mistake, where there is autonomous search, there will be autonomous advertising—can transform many other areas of life. Bianca Bosker, a technology journalist, hints at this digital and highly automated future when she complains that she no longer finds places to eat; rather, they find her. Or, in the parlance of Silicon Valley, “search” is displaced by “discovery.” She writes,

My web searches for new neighborhood joints—“best brunch Flatiron NYC,” “café East Village”—have given way to Foursquare insta-alerts that pop up on my phone to tell me there’s a nice place nearby. Thanks to the app’s “List” feature, which allows me to subscribe to lists of must-try destinations compiled by friends and city guides, Foursquare lets me know whenever I’m close to a restaurant that has scored an endorsement. Hunting and gathering online for ideas about where to get my next meal—or outfit, or book, or playlist, for that matter—has given way to sitting back and being served up snack-sized morsels of information. I’m not seeking. I’m ab-

sorbing. Our process for finding new information looks a lot less like a home-cooked casserole we've whipped up from ingredients cobbled together from the deli, Farmer's Market and back of the fridge, and a whole lot more like a drive-through meal. Quick, easy and slick, with just a hint of industrial perfection.

As Bosker correctly points out, this shift from manual search to "autonomous search" or "contextual discovery" results in technological systems that now deliver "a personalized selection of anything from songs to soulmates without an explicit request by the seeker." And the technology gurus concur. As Stefan Weitz, director of Bing, Microsoft's search engine, told Bosker, "The implicit searching on your behalf—without you initiating it via a query—is absolutely where we're going. Today the trigger is 'keyword' plus 'enter.' But tomorrow the trigger event could be you woke up and it's 8 AM and the train [you were supposed to take] is not functioning." This may all be revolutionary innovation, but it also sounds like the ultimate triumph of consumerism. And yet, thanks to our pro-innovation bias, consumerism—even Bosker doesn't mention the word—is not usually mentioned in the context of debates on "autonomous search" (she does point out, though, that if the current trends continue, "we'll be told what we want before we know we need it"; Illich wouldn't approve). To evaluate the Quantified Self and its impact on public life, then, it's not enough to simply hope that the tracking devices will help us solve a carefully delineated social problem. Such problems rarely exist—and the schemes to fix them would do much more than their promoters expect, as they would overlap with other systems, technologies, and agendas.

When Facts Are Made of Water

But, some might counter, surely some activities that have little to do with aesthetics might be more amenable to quantification? Measuring how much water or electricity we consume seems relatively unproblematic; should we really be concerned, following James Scott, that some "narrowing of vision" is taking place? When it

comes to metering, it seems, relating inputs and outputs resembles our reading the thermometer and deciding whether to wear a sweater: if we save water, it's good for nature; if we don't, then it isn't. What could be more straightforward?

One could probably make a good case that the Quantified Self movement began in earnest once it became common—perhaps even fashionable—to install meters in our homes to monitor household consumption of water and electricity. Now, some might argue, the same logic is spreading to our smartphones and our browsers, which just happen to be more powerful. And even meters are now being supplanted by devices like the Wattcher, popular in the Netherlands, which shows not only current or daily energy consumption but also how well it compares with daily targets. Yet, even here not everything is what it seems at first sight. In her discussion of capabilities important for human flourishing, philosopher Martha Nussbaum notes that “citizens cannot relate well to the complex world around them by factual knowledge.” Thus, she points to the importance of what she calls “narrative imagination.” Even though Nussbaum defines this as “the ability to think what it might be like to be in the shoes of a person different from oneself [and] to be an intelligent reader of that person’s story,” we don’t need to limit narrative imagination to person-to-person interaction only. Narrative imagination, thus, might also involve one’s interaction with complex sociotechnological and political systems and the ability to see one’s own role in them.

We can further contrast “narrative imagination” with the somewhat oxymoronic “numeric imagination,” which can be defined as the predisposition to seek out quantitative and linear casual explanations that have little respect for the complexity of the actual human world. Where narrative imagination is self-reflexive—it’s painfully aware that in order to account for the world, it also needs to account for the observer—numeric imagination believes in objective, firm accounts of reality out there; these accounts are timeless and never expire. The world just reveals itself before the observer much like electricity use reveals itself on the observer’s metering system: there’s not much to debate.

The problem with numeric imagination is that it’s very bad at describing complex systems, let alone imagining how those systems

can be rearranged. Facts are seen as eternal, so numeric imagination, by and large, lives in the present and eschews any kind of contingency and historicism. Narrative imagination, by contrast, knows that most present practices, norms, and commitments are not timeless and that, by claiming to be the only way of doing things, they usually conceal many other alternatives. It acknowledges that even facts can be revised; one day we might think that being overweight is very bad for your health, and just a few years later we might discover that the extra weight could actually protect you from many serious diseases.

The Quantified Self movement, in its current form, is madly devoted to articulating facts—that's what numbers are good for—but it still has no way of generating narratives out of them. In fact, it might even block the formation of narratives, as self-trackers gain too much respect for the numbers and forget that other ways of telling the story—and generating action out of it—are possible.

So, to return to the practice of metering water and electricity, it's easy to mistake one's decision to monitor resources for a genuine reform of how water and electricity get into our homes. Ideally, the decision to monitor should be just a tiny complement to other practices and attempts to generate narratives about water and electricity use and convert those narratives into action. The problem is that it's impossible to generate those narratives without first getting a good picture of how water, gas, and electricity get into our homes—and the metering practice does not provide those narratives.

As anthropologist Maria Kaika writes in *The City of Flows*, “In the advanced capitalist world, the supply of water, electricity, gas, and information now appears to enter miraculously the domestic sphere, coming from nowhere in particular and from everywhere. Even garbage disposal has become a matter of throwing things in a hole in the wall, where both trash and smell miraculously disappear. For the urban dweller, the end of the process of garbage disposal is the moment when the bag is thrown into the hole.” To know what's inside our smart trash bins—which is what projects like BinCam seek to tell us—is not the same as to know what happens to our garbage once it leaves them. The latter is much more important to environmental reform than the former.

We know as little about garbage disposal as we do about cloud computing; only rarely do we ask what exactly it entails, why we

do it the way we do, and how we can do it differently. Monitoring how much garbage we throw away, how much water we consume, and how much information we upload and download from “the cloud” doesn’t get us any closer to understanding how these complex systems function. “Numeric imagination” enables us to think in numbers—that is, to ponder how much we can consume and, in the best of all cases, what we can unplug—but it never challenges us to think of how a different set of numbers might be generated. It seems naïve to believe that the problem of climate change can be solved if each of us spends a minute less in the shower; the solution might require both more substantial sacrifices and perhaps even stepping out of the shower and fighting that fight somewhere else.

As Veronica Strang, another anthropologist, observes in *The Meaning of Water*, metering—at least when promoted by water companies—is also embedded in a complex economic system that itself is based on certain assumptions about resource ownership and what constitutes ideal means of resource management. According to Strang, “Meters concretise private ownership and empower managers, rather than the population as a whole, to decide what constitutes ‘profligate’ water use, or, as government agencies put it more diplomatically, ‘discretionary’ or ‘non-essential’ purposes.” Thus, she writes, meters “also express perfectly the social individuation that has led people to feel that their resource use takes place within the fortress of the family home, detached from the wider social and physical environment.” One might think that the Quantified Self movement, decentralized as it is, would not be subject to similar pressures, but this too seems unlikely, as corporations both manufacture the gadgets used for self-tracking and own the online platforms and message boards where data is shared.

Devices like the Wattcher, which can simply be plugged into a socket, are not yet pushed by the utility providers as aggressively as were meters. But this day will soon arrive, even if the task of agitating for such devices falls to Kevin Kelly and Gary Wolf. Based on the evidence we have so far, however, it’s not clear if such feedback devices merely lock users into their existing patterns of consumption or challenge them to think about their water and energy use—and how to cut it—with a little bit more creativity and imagination.

Yolande Strengers, an Australian sociologist who has studied how various energy-use feedback systems inform consumption practices in Australian homes, notes that participants in her experiments “did not, for the most part, pause to reflect on or change those activities they considered normal and necessary.”

At the same time, as Strengers argues, what counts as normal and nonnegotiable is itself always in flux and, moreover, informed by the consumption system and its infrastructure. Washing one's clothes after every use may seem normal today, but it certainly was not fifty years ago, as sociologist Elizabeth Shove notes in *Comfort, Cleanliness and Convenience*, her exposé on how norms and expectations about comfort and cleanliness have changed over time. Likewise, using a dryer or leaving the air-conditioning on in relatively mild weather is also a recent development, not a timeless norm. Self-tracking can tell us how much energy our air-conditioning system consumes and might even tell us how well its demands match our own goals, but it cannot comment on the desirability of leaving the air-conditioning on. Numeric imagination might tell us how to use the air conditioner more efficiently, but narrative imagination can tell us whether we should use it at all.

In fact, feedback systems trigger what psychologists call a licensing effect in that, seeing that our energy consumption is lower than we predicted, we might stop worrying about it altogether. Yolande Strengers reports on how some Australian households responded to a feedback system called EcoPioneer that uses a traffic-light system to indicate whether a household is consuming too much electricity. One participant, for example, noted of the yellow signal she kept getting, “I was always worried about using the dryer so much, but I figure it doesn't make it scream red so it's OK.” But if one were to examine the EcoPioneer system more closely, it's not even obvious if the green light means what we think it does. As Strengers notes, the system is meant to measure energy consumption in real time, not cumulative consumption over, say, twenty-four hours. Thus, to maintain a green or orange light, households just have to distribute their energy consumption across the day. Although this is good for electricity distributors (as it creates load shifting and results in more efficient distribution), it does not

To Save Everything, Click Here

necessarily reduce demand. But it does look good on paper: the households are doing their “citizenship” bit, and the distributors are getting more efficient distribution. Without some kind of narrative imagination, though, this system may actually only lock in current energy habits.

Hunches and Fractured Pelvises

So what do attempts at self-tracking tell us? Well, all too often it’s hard to say. Kashmir Hill, a *Forbes* journalist who has written about the Quantified Self and its numerous applications, expresses a sense of befuddlement over what to do with the results of one such self-tracking experiment. Thanks to some clever software, she finds out, “I’m happiest when drinking at bars (duh); least happy on planes and at work (ahem); Sunday is my happiest day of the week followed by Wednesday; I’m just as happy alone as with other people, and I’m happier interacting with my ex than with my current boyfriend.” What to do now, though, Hill doesn’t know. “I’m at a slight loss for what to do with these results. Does this mean I should spend more time in bars and less time at work to optimize my happiness? And should I rethink my relationship?”

The problem is that, as firm, scientific data, these results have no standing. As moral prompts to action or conclusions drawn from months of self-reflection, they hold no standing either, for clearly Hill did not deliberate much about her drinking or working habits in the process of using the software. At best, these are correlations. But what use do such correlations have? For some members of the Quantified Self movement, correlation is all that matters. Meet Seth Roberts, who claims that eating butter makes him faster—well, this is what his data says anyway (“Two years ago I discovered that butter—more precisely, substitution of butter for pork fat—made me faster,” begins his blog post)—or Sanjiv Shah, who thinks that wearing yellow glasses before going to bed improves his sleeping patterns (it’s all in the data, stupid!). Of course, some self-trackers are aware that their conclusions may not be, well, scientifically valid; as one such enthusiast told the *Economist*, “With self-tracking you never really know whether it is your experiment that is affecting the outcome, or your expectations of the experi-

ment.” In science, this is widely known as the placebo effect, and in academic experiments every effort is made to minimize its influence. With the Quantified Self, however, what matters is not knowledge per se but, rather, the utility of various knowledge claims in helping improve one's health or sex life.

Most curiously, one doesn't need to know how such knowledge will be used; much of it is generated and stored preemptively. As Wolf points out about his fellow Quantified Self members, “Although they may take up tracking with a specific question in mind, they continue because they believe their numbers hold secrets that they can't afford to ignore, including answers to questions they have not yet thought to ask.” So do self-trackers collect data, information, or knowledge—to invoke the famous pyramid that dominated much of information-management literature for decades? Information scholar Martin Frické, writing of data-mining initiatives, observes that they promote a tendency to confuse data with information and encourage “the mindless and meaningless collection of data in the hope that one day it will . . . ascend to information—pre-emptive acquisition.”

To make fun of such preemptive attempts, Peter Austin datamined the health records of 10 million Ontario patients to draw some fascinating conclusions about them. One heart-wrenching, revolutionary finding was that “Virgos vomit more, Libras fracture pelvises.” Alas, the results didn't hold when Austin and his colleagues tried this hypothesis on a second population. Austin notes that you only need to “replace astrological signs with another characteristic such as gender or age, and immediately your mind starts to form explanations for the observed associations. Then we leap to conclusions, constructing reasons for why we saw the results we did.” However, he argues, “the more we look for patterns, the more likely we are to find them, particularly when we don't begin with a particular question.” In other words, what Austin takes to be the mark of bad research has somehow become a defining, beloved feature of the Quantified Self movement. To be fair, the aversion to theories and absolute belief in the superiority of big data also form one foundation of solutionism; it's not unique to self-trackers as such. Kevin Kelly, in his typical celebratory mode, tells us that “exhaustive data, the Google way of doing science, is better than

having a hypothesis.” Harvard’s David Weinberger writes a multi-page love letter to Hunch.com—a site (now owned by eBay) that asks users hundreds of questions to predict what movies or books they will like—calling it “a serious shift in our image of what knowledge looks like.”

As is common with revolutionary rhetoric, the claims of revolutionary activity are everywhere—but where’s the revolution? Hunch.com simply uses the techniques of statistics, data mining, and machine learning—all well-established disciplines that predate “the Internet”—to turn correlations into recommendations. For Weinberger, the claim that “75 percent of people who liked *Mad Men* also liked *Breaking Bad*” is revolutionary because, unlike Darwin’s theory of evolution, it is “theory-free.” However, such “theory-free knowledge”—think of census reports, surveys, and marketing questionnaires—has a very long history. Yes, people fill in these forms online now, but is this revolutionary? Rupture talk rears its ugly head again.

Is this the kind of knowledge that will help us cure cancer? Weinberger might be right in that “it doesn’t have a hypothesis and it doesn’t have a guess. It just has statistical correlations,” but we also know what such utilitarian consumption mapping is good for fueling endless shopping sprees on Amazon. In the future, it will also be great for fueling conspiracy theories, as Glenn Beck, the Tea Party, Alex Jones, and anyone else with a lot of free time and cheap computing power will be running correlations between, say, race and educational performance or levels of happiness and social welfare. There might even be lots of volunteers eager to supply the data by tracking themselves. As per Weinberger’s advice, this crowd won’t need a hypothesis or a guess; it will just be mapping statistical correlations.

Of course, if critics like Austin have their way, such correlations will be dismissed as puerile nonsense. If, however, the likes of Weinberger, with their perennial revolutionary claims, get the upper hand, our institutions will need to spend even more of their cognitive resources on fighting off the challenges brought by various conspiracy theorists. As the never-ending arguments over climate change show, we are already living through a period when trust in

expertise is all but gone. Supplying those who want to challenge it further with odd theories of knowledge will only make things worse.

The fact that the Quantified Self movement or data miners like Hunch.com can churn out “insights” doesn’t—and shouldn’t—elevate those insights to the status of knowledge, not if the word “knowledge” is to retain any meaning at all. Google’s way of doing science is actually no way of doing science at all—it’s something else entirely, and we shouldn’t be treating it as on a par with authoritative, expertise-driven research. Sometimes perhaps a marketplace of ideas needs tighter regulation. As philosopher Philip Kitcher points out, “We lack institutions on which people can rely for facts that matter to their decisions.” Kitcher is skeptical that “trust can be restored by untrammelled public discussion, for . . . once trust in expertise has broken down, ‘free expression of ideas’ often erodes further the credibility of those who know.” Likewise, legal scholar Robert Post argues, “If a marketplace of ideas model were to be imposed upon *Nature* or the *American Economic Review* or *The Lancet*, we would very rapidly lose track of whatever expertise we possess about the nature of the world.”

The problem, of course, is that the idea of “the Internet” that our pundits operate with, combined with the tremendous success of Wikipedia and Google, has all but prevented them from standing up to defend expertise and the practices that create and sustain it. Rather, in their populist mode, they prefer to celebrate movements like the Quantified Self and start-ups like Hunch.com as revolutionary and suitable, even if completely different, ways of replicating previous knowledge structures. They are not—and the sooner we acknowledge this, the healthier our public debate will be.