Self-surveillance

Should you worry or simply embrace your personal data?

Laurie Frick

Have you ever wondered how much of your personal data is publicly available? What pictures are posted, what might be recorded, captured, documented, or stashed away in a database somewhere? Your internet browsing habits, travel patterns, online shopping, and credit card spending are just the most obvious information that someone else can access; what else could be knowable with a little effort, a little digging, a little data gathering? Some time last year, I began to make a list of what information about me might be available to others. In true quantified-self fashion, I scored each entry of data collected about me on a scale of one to five based on how public or private the information might be: 1. available through Google search, 2. findable with a little effort, 3. sitting in a marketer's data base, 4. personal—held by me, and 5. the NSA can dig this up. I made the scale well before the news last year that the NSA was indeed gathering metadata on our phone calls, emails, social contacts, online searches, and even online games.

I stopped at well over a hundred entries, and every few days I would think of something else that had been captured about me: my behavior, my financial standing, my medical records. Odd things, inconsequential things, but all things that pooled together could paint a picture of me with even more detail and richness than I might be able to recall about myself. Every movie I had watched on Netflix, every purchase on Amazon, the location of every dollar spent with a credit card, messages sent or pictures taken by my iPhone.

What does all this personal data add up to? Is it a boon to marketers, who help companies mine your personal data, or just

a nightmare scenario for advocates of privacy? As an artist who grew up in the tech industry and embraces technology, I had thought about a future where personal data could become meaningful. Maybe all this vaguely unpleasant surveillance and data gathering could turn into a surprisingly insightful view of ourselves and be delivered in ways that are irresistible. This essay is a view of the future from my perspective as an artist. I say: embrace your personal data.

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Almost four years ago I started collecting data, beginning with daily time-keeping. It felt to me as though something in all our daily routines had shifted and time felt more sliced and fragmented than ever. The writer Linda Stone has described this phenomenon as “continuous partial attention” and I felt it was deserving of study. And the best way to understand something is to measure it.

But keeping track of time, minute-by-minute, is harder than it sounds. After several amateurish attempts, I searched online for established methods to track time on a daily basis. I found Ben Lipkowitz, an engineer and coder. Between 2005 and 2011, Ben logged every hour of every day, sharing it online at www.fennetic.net. Although he

stopped recording at the beginning of 2011, the data are still documented, annotated, and available online. Rather than be totally intimidated by Ben's prodigious talent and relentless recordkeeping, I instantly snagged and downloaded all of his data and combed through it for patterns. My theory that the rhythms of daily time are familiar and visually appealing held true.

In part because I was intimidated by the difficulty of tracking how I spend my time, I chose to focus on gadgets that would do all the work[#] for me. I thought I could try to live just a little bit in the future and use myself as a test subject using sensors and devices that required no effort on my part. In early 2010, I purchased a Zeo sleep tracker. All I had to do was strap the headband on and fall asleep. In the morning, I had a minute-by-minute record of deep, REM, light, and awake sleep states using a finely calibrated dry EEG sensor. Altogether I have been measuring my nightly sleep using a Zeo EEG headband for more than three years and have an excess of 900 nights of sleep data. But in 2013, Zeo sadly went out of business. While early adopters will strap an EEG sensor to their head every night without hesitation, the geek factor of a clunky headband is a serious limit to marketability.

In the scientific literature, sleep has always been described as 90-min cycles, and I imagined sleep as big blocks of uninterrupted time. It turns out that sleep is actually similar to our waking hours, with much more neural activity than you might imagine. It is a ragged collection of short bursts—5, 10, or 15 min—of deep sleep and REM sleep. I wake up a lot and my brain seems to be pretty busy at night.

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[#]Correction added on 12 February 2014, after first online publication: “that required” was changed to “work”.

“Quantify-Me” 96 laser-cut measurement drawings hung so the viewer can experience the feel of walking through floating data. Approx 20 ft × 20 ft × 10 ft high. Based on sleep, weight, pulse, upset stomach, email, and daily online activity, 2012. Photograph by Rino Pizzi.

I blogged about the sleep data I collected and used it to produce a body of artwork hand-built from blocks of wood based on waking-sleeping patterns; this work received a number of upbeat reviews from a gallery show in Los Angeles. As a result of the publicity, the head of research at Zeo, Stephen Fabregas, sent me an email asking if there was anything he could do to help. I asked him for more sleep data and he supplied the anonymous records of the staff at Zeo: men and women of different ages who had all been tracking their sleep since the early days of the company.

I dumped all this data into a spreadsheet so that I could compare a month of sleep at a time for different people. It quickly became apparent that an individual's sleep patterns have an identity, in much the same way that fingerprints are unique. Every sleep chart looked different, but identifiable and the head of Zeo research said he could name the person on his team just by

looking at a few nights of their sleep data. This was the beginning of an idea about human patterns, but it was going to take a few more gadgets, a couple more years, and more data gathering to get a full sense of why and how individual data patterns could be important.

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At a summer programme at New York University's Interactive Telecommunications Program on arts and technology, Steve Dean, who runs the New York chapter of The Quantified Self (quantified-self.com), showed charts of tracking his

temperature every morning while he was training for a triathlon. You could very clearly see that if his temperature was elevated even a small amount, he knew that he'd come down with something in about 48 hours and learned to back off his training regimen a bit to let his body bounce back faster. Unlike my art friends, who think I'm a bit obsessive, overly organized, and a little too much in love with data, I found men and women at the summer programme who had gone far deeper than me into the world of self-tracking and hacking DIY gadgets to measure themselves. I even got to meet Ben Lipkowitz in person. “Come show your art based on sleep data at our next Quantified Self meeting,” Steve challenged me.

Quantified Self's motto is “Self knowledge through numbers.” The organization has almost 100 chapters in more than 90 cities, with 25,000 members around the world. It is dedicated to creating self-tracking tools to help people make the most of their personal

"Brooklyn to Governor's Island" (detail), 8 in × 20 in, based on tracking of location, along with speed and frequency of movement. Wood, cut paper, and pencil, 2012.

data. It is still early days for the movement, but companies and investors already attend the annual conference, looking for indications of how the masses will adopt the kind of self-tracking technology that will eventually be sewn into clothes, ingested in medications, stuck like tattoo stickers on our skin, and embedded in thin sensors on the back of watch bands.

I learned everything I know about self-tracking from The Quantified Self movement. With their help, I added to my daily regimen over a 3-year period to capture steps walked, calories burned, weight, sleep cycles, detailed online behavior, computer use, hours of talking, location, travel patterns, daily mood, skin temperature, pulse, and a micro-journal of food ingested. I did all of this using gadgets that point toward a time when complete self-surveillance will be the norm. My goal of experimenting with personal data and attempting to self-experiment by living just a little bit in the future was easier than I thought.

Every time I looked for more inspiration or better solutions, there was a new Kickstarter (www.kickstarter.com) project for self-tracking tools or new commercial device that recorded biological data, or a new app that recorded movement. 23andMe (23andme.com), the genome sequencing service, ran specials that dropped the price for DNA testing to US\$59. Proteus (www.proteus.com) got FDA approval for a sensor that you can swallow that transmits radio signals to a small patch stuck on your chest. Nike (www.nike.com) and Fitbit (www.fitbit.com) launched trendy new wristbands to track steps and sleep cycles. Basis (www.mybasis.com) deployed their pulse, skin temperature, perspiration and step counter watch, and sold thousands. Although it is ugly and seriously uncomfortable, I'm convinced after wearing my Basis for 9 months that the 24-hour sensors capture very interesting data about your behavior. You can tell a lot just by looking at your skin temperature over a day.

Google must be drooling over biosensors in their plans to own contextual data about you.

As time went on, I began to notice the sense of reassurance I got each morning from getting a sleep score, and the sense of recognition I felt each evening from my Fitbit step counter. I got into the rhythm of seeing my weight and fat percentage every morning. Oh yes, that chocolate bar the day before had consequences. The digital devices I was using were giving me a sense of acknowledgment simply by noticing what I had done and giving me little LED readouts. Using them is a little like having a "mechanical mom" and I find it strange how I can feel a sense of connection and approval from an inanimate device.

I prepared more drawings, cut and made more art from my data, and spent hours studying and reviewing the relationships between types of data. Did my patterns of

"Red Pokey Sleep" 4 stages of sleep, REM, deep, light, and awake states are measured, numbered, and colored. The light sleep, often called trash sleep, was folded up and eliminated. 12 in × 12 in. Paper, watercolor, and ink, 2011.

sleep relate to the number of steps I had taken that day? When did city weather have an effect on my sleep? If I had an upset stomach, what else was affected? After gathering a thousand days of self-tracking data on dozens of data points and getting help to analyze correlation, along with cause and effect, I am less hopeful we will anytime soon understand the relationship between all the variables of food ingested, sleep, exercise, and stress. Humans are incredibly noisy data objects.

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"Humans are incredibly noisy data objects"

I stepped back to think about abstract patterns revealed by the data. Patterns of movement through a city were repeated over and over; we do go the same places more than we remember. My time online was concentrated into little bursts of 5–15 s slices as I clicked through email and zipped through dozens, sometimes hundreds of page views in the morning, then longer stretches of time as I worked on Photoshop and Illustrator in the afternoon. The numbers of steps I took and how they were spaced out through the day all turned into hand-drawn squares, numbered and catalogued. Soon my studio was filled with cut patterns. Walls filled with my personal data. I liked it. They felt like me: human, personal, reassuring, and oddly recognizable.

"Why couldn't everyone have such patterns of their personal data fill their walls?" I thought. Perhaps seeing the abstract patterns and rhythms of your self-tracking data is a shortcut to mindfulness: a quick and dirty way to boost your immune system, to achieve the benefits of meditation and self-reflection without much effort. I imagined laser and 3D printing technology delivering physical, tangible hand-made patterns directly to people's walls without the cost or intervention of an art gallery or even an artist. I started talking with my friends about the art we might see on the walls of futurist homes where lasers would cut and recycle wall textures based on personal self-tracking data. Art, I am convinced, will be the reason to really stop

to look at personal data. Technology will turn digital data into physical art and it will be irresistible. My artist friends and art dealer were seriously horrified.

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The future, I think, is human data portraits manifested from personal tracking data gathered invisibly as we move through the day. We are so close to gathering every possible morsel of data about us, so imagine what you could do if you owned every bit of data about yourself. I think it is more than just living with personal data and abstract patterns of yourself, it is about what these patterns reveal about us. The data collected about

us will unfold a personal narrative and story to reveal a hidden part of us we are trained to ignore; will provide a way to know ourselves and anticipate what comes next.

While the Quantified Self people often describe self-tracking in Calvinist utilitarian terms such as fitness and health, the real driving force of self-tracking will be our desire to understand ourselves. While social media have tapped into our basic emotional desire for bonding and connecting with other people, the personal data phenomenon will tap into our basic emotional desire to know ourselves and to understand and anticipate our behavior and health. Personal data is about identity.

I have become more convinced that the big payoff for self-tracking data is about anticipating patterns. The words we say, the places we go, the speed we respond to messages, who we see, the terms we search, what we watch, our back posture, biomarkers, glucose level, and so on. All the things that feel natural, involuntary, mysterious, and

human. We are an algorithm that can be read, we can anticipate mood, focus or attention. We're up, we're down. We're on, we're off. Personal data will help us know ourselves and know what comes next. So embrace your data.

“We are an algorithm that can be read, we can anticipate mood, focus or attention”

Will this knowledge kill the mystery of being human? Will it simply magnify our defects? I do not think so. I think sensors and a mass of measurements will acknowledge and present patterns of self-examination that lure us into a future of self-quantification that is irresistible.

Conflict of interest

The author declares that she has no conflict of interest.