THE HUMAN BITS: THE PEOPLE UNDER ALL THAT DATA
The meaning (and uselessness) of life-tracking

By Eri Gentry

> **"The unexamined life is not worth living."**
> — Socrates

Buster Benson found that the course of his in-person interactions would change based on the information people saw about him online. A coworker would greet him at the office by saying, "You're an 8 today. You must be feeling pretty good! Let's talk." Acquaintances would avoid writing him during periods of heavy email inflow.

Starting in 1999, Buster tracked not only the number of emails he received per day but also his levels of morale, health, sleep, alcohol, and caffeine on a scale from 1-10. These numbers were publicly available on his blog (busterbenson.com). Today, his blog shows his email traffic, how much time he spent walking and eating, how often he was angry or sad, and pictures of him shared around the web. The page greets visitors with the option to "Search all 32,402 entries."

Buster is a successful Seattle entrepreneur, notably the creator of HealthMonth, a profitable online game in which players try to improve their lives (eat better, get out of debt) by changing one small thing per day for a month. He identifies himself as a husband, a father, and someone who, after 14 years of collecting personal data, is still struggling to find meaning in all of it.

What's that you say? This master of self-tracking has spent over a decade analyzing his life and he still doesn't understand it? Well, yes and no. Let's first try to see this challenge from his point of view. As a pioneer in digital self-tracking, Buster has made some important discoveries that can make our own self-tracking easier.

In his recent Quantified Self talk, "Why I Track," Buster explained how he expected to find correlations in his data that would guide him in dividing and organizing his life. He especially expected to see a positive correlation between having great days and high scores in the short list of meaningful variables he'd curated, which included spending time with family, running, and sleeping eight hours. To set up the data, Buster tracked individual variables like sleep and mood, then scored each day on a scale from 1-3. (The scale tells him whether he thought he had an above or below average day.)[1]

> Buster measured this correlation using a scale of p. p value of 1 connotes significant, positive correlation; a p value of 0 means no correlation. A p value of greater than 0.5 implies positive correlation.

Intuition told him that spending more time with his wife, exercising more, or watching a movie would have a positive correlation with above average days. In fact, none of these factors correlated with above average days. There was *no* correlation.

Buster hoped for a p value of greater than 0.5. His actual correlation between the factors listed above and above average days was negative 0.13. Ouch.

What does this mean for the rest of us mere mortals with a bad habit (or 10) to shake? While Buster's results were surprising, his desire to track has not lessened. He has actually created a challenge for others to find positive correlations in their data and share their observations.[2] Ultimately, the data does not predict outcomes or guide us into living the perfect lifestyle. But it does offer us a window of introspection through which we can pull out the bits that are meaningful to us. Through tracking every lifestyle variable he could think of, Buster realized that many, if not most, of them were useless, but he also discovered the few that were really important to him. He found that data are important to track, and can be unpredictably useful at different times, but don't give an accurate view of happiness or meaning over time. We have to develop our own methods for that part.

It is key to understand the human nature that lies beneath the creation of big, personal data as we move towards a more quantified world. Human factors are at the root of why simply prescribing medications doesn't work — people forget to take them, or *whether* they've taken them. Despite their known health risks, people may still make choices that are damaging. Device makers and health providers are grappling with these issues. And when policies do not successfully improve our lives, it makes sense to go to the center of the issues — to the people themselves. One group leading this movement is the Quantified Self.

The Quantified Self: Self Knowledge Through Numbers

When people ask what the Quantifed Self is, its cofounder, Gary Wolf, likes to ask, "What do you think it is?" This line of questioning usually reveals the original asker's motivations and, sometimes, a story about their own self-tracking. The Quantified Self is whatever you want it to be. It's quantified — it's about you. To understand how that notion came about, let's go back to the beginning.

The Quantified Self was born in 2008 when *Wired* editors Kevin Kelly and Gary Wolf independently noticed the adoption of new technologies for self-discovery. Gary had recently used the software SuperMemo, which utilizes an uncommonly practiced technique called "spaced repetition" to learn Spanish in an absurdly short amount of time. Kevin is famed for chronicling the technology age from its inception, including in his 2011 book, *What Technology Wants,* which has been called "a sharp-eyed study of our abiding need for cars, computers, and gadgets" by *The New York Times.*

The self-tracker concept is nothing new. Farmers noting field conditions and resulting crops or dieters measuring their weight against food intake are examples of experiments many of us run in order to lose, gain, or optimize. The trend Kevin and Gary recognized was this experimental behavior taking place in the digital world. They believed that new crops of devices would become central to self-tracking.

Feeling that they might be missing something, they decided to host an informal discovery meeting, where self-trackers were invited to talk. When one guest trickled in late, he was teasingly told to go first, with no other instructions. Unphased, the man pulled out his laptop and opened a spreadsheet that detailed how he had spent every 15 minute chunk in the past year. The story goes that, immediately, the cofounders recognized that *this* — the human side of tracking — was where the real story was.

Quantified Self meetings, known as "Show and Tells," happen in over 60 cities around the globe and attract about 12,000 people in sum. Enthusiasts include people from every spectrum of society: entrepreneurs, patients, Olympic athletes, health nuts, venture capitalists, and people who simply say they "want to be more awesome."

The Tools

We know that data collection and analysis is no longer an occupation solely of academics, corporate types, governments, and the like, but is fair game for anyone who has access to data. Personal computers, smartphones, and now a bevy of Bluetooth-enabled devices are changing the players in the big data game, allowing individuals to collect hundreds of data points per second and glimpse their results in real-time.

Data are being collected using a wide range of devices, from fitness tools like Body Media's BodyFit, to financial monitors like Intuit's mint.com. Companies large and small (Omron and Fitbit, for example) have jumped in, creating devices targeted to the individual.

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A Snapshot of Devices

Brain: Emotiv — an EEG headset initially designed for gamers

Stress: emWave — a heart rate variability monitor that trains your breathing

Sleep: Zeo — an EEG headband worn at night that monitors sleep, wake times, and sleep stage

Steps: Fitbit One and Zip, Misfit Shine, Zamzee (for children)

Athletics: Zephyr BioHarness, BodyMedia, Basis health watch

The Users

Making sense of nascent tools — let alone the influx of piles of data — is not simple. For the person who wants to see through the data, experiments are necessary, and few among us are properly trained in experimental design. Lack of analytical skills can get in the way of finding meaning, making what began as a hopeful endeavor turn into a difficult, and often lonely, experience.

The Quantified Self has been a popular draw because it has the dual purpose of being a marketplace for human frustration and learning. The presentations, side conversations, and unavoidable human connections often inspire, motivate, give us that "aha!" moment, or plant seeds that we take back to our everyday lives. People are programmed to seek families and communities. This aspect of human nature underlies the success of group weight loss programs like Weight Watchers and Jenny Craig over traditional self-regulated diets.

Big Data: What's in it for Me?

While one person examines her life in order to be happier, larger entities (Aetna, the FBI, Google) standardize and generalize massive amounts of data across populations in order to make it useful for them. The challenge is in motivating the individual to share personal data for the benefit of a population.

For those who would benefit from big data, it is essential to dive deep before developing a working incentive system for potential data donors. To understand one's motivation to track, and especially to share, we must ask the self-tracker a few simple, but fundamental, questions:

1. Why do you track?
2. What did you learn?
3. What now?

Tracking provides a way to understand behaviors and cause and effect over time, something the human mind is quite poor at doing on its own. Yet, different people have different reasons to pick up a device.

To generalize, self-trackers typically come from one of three camps:

1. The perennially curious
2. Those with a disease to monitor or improve
3. Those who want to be bigger, faster, or stronger

The motivations behind each group are different but, largely, self-explanatory.

The curious are always on the lookout for the next fun — not necessarily important — thing. They're prone to trying new tools and leaving them on the shelf for the next new gadget.

Those struggling with a disease are sometimes self-motivated as well as compelled by friends, family, and physicians. There is an obvious pain point that might be remedied simply by becoming more aware of risky behaviors with tracking.

The "more awesome" camp have long been self-tracking, having used gadgets such as heart rate monitors, GPS speed trackers (e.g., Garmin watches), or nutrition regimens. This group insists on quality and accuracy.

While technology is blurring the lines between the self and the device, businesses seeking to play in the market, and regulators attempting to regulate, are bringing conflicts over interests in data into sharper focus.

When Humans and Devices Collide

If a company implants a pacemaker in your chest, does the pacemaker belong to you? Does it belong to the manufacturer of the device? Did I make the dataset of my heart's activity? Or does the manufacturer own the data because, without the device, no data would have been collected? The answers to this and related questions are not simple. Because these questions are not well-resolved, avid Quantifiers can find themselves frustratingly close to data about themselves they cannot access.

Hugo Campos is a San Francisco-based designer whose self-tracking is at the heart of this debate. Hugo is known in the Quantified Self community as an aesthetic, noted for his beautiful photo food diary, for which he is more cautious about the visual appeal of the food than its nutritional content.

Hugo also has a cardiac defibrillator implanted in his body. Without it shocking his heart a few times a week, Hugo could go into cardiac arrest.

It is clearly in his best interest to have a pacemaker, but Hugo is the kind of guy who doesn't stop at good enough. He wanted to design his life, including diet, to minimize his cardiac events. So, he exercised more. He changed his diet. He even went vegan for a month.[3] And all he needed to do in order to see whether his life changes had affected his heart was to see the data from his defibrillator. The only problem was that he wasn't allowed to see it because current federal privacy laws on traditional health files do not extend to implants and other new technologies.[4]

Ponder this unsolved mystery of the digital age: if *you* produce data with the aid of technology, who owns it? As wearable technologies become more and more ubiquitous, these questions will become a greater part of the conversation. **Q**

Eri Gentry is best known for her work in Citizen Science, namely founding the first hackerspace for biotechnology, BioCurious. Her professional life — as Special Projects Director at Quantified Self Labs — revolves around understanding the human experience of self-tracking. Gentry frequently speaks about such topics as human behavior, the share economy, and "hacking medicine." Her work has been covered by an array of publications, including the New York Times, Forbes, Wired, The Atlantic, and in the books Biopunk, Regenesis, and The Nature of the Future.

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