



SECTION
4

CHAPTER 4

Technology & Habits

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Everything should be made as simple as possible, but not one bit simpler.

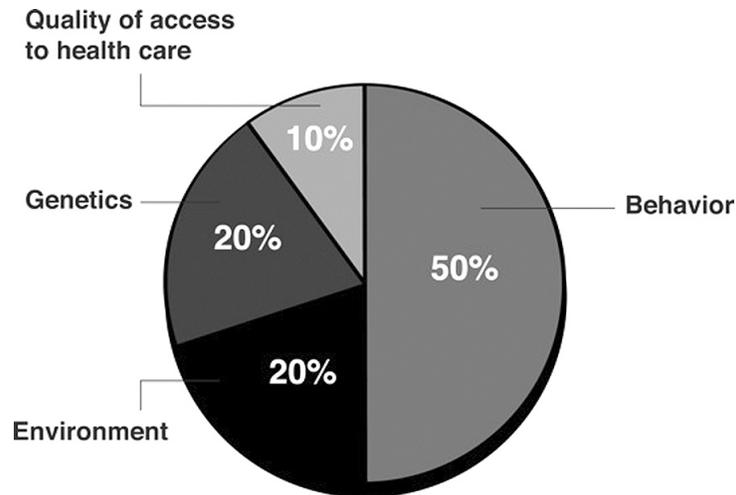
— Attributed to Albert Einstein

In mid-November of 2007, I was fortunate to attend a brainstorm workshop sponsored by Centers for Disease Control and Prevention (CDC) at the Institute for the Future (IFTF) in Palo Alto. The topic was how the CDC could accelerate innovation utilizing an open collaboration model. IFTF is a world-renowned think tank that helps many of the largest corporations and governmental organizations think deeply three, four, 10 years into the future. Their work stimulates scenario and long-range plans based upon the many forecasted future dilemmas.

The workshop drove home two important concepts. Improving our country's health requires a system of collaboration and the biggest problem (or greatest opportunity) is modifying our unhealthy behaviors.

We learned there are four significant components, which determine an individual's health. They are (1) access to quality health care, (2) the environment in which they live, (3) the genetics they are born with, and (4) their day-in-and-day-out behaviors. While the percentage impact of each of these segments undoubtedly varies around the world, for the United States, 10 percent of an individual's health is attributed to access to quality health care, 20 percent to the environment, 20 percent to genetics, and 50 percent is attributed to daily behaviors.

Fresh into the health and healthcare industries, I was struck by a stark fact. The lion's share of our nation's healthcare resources and energies are NOT targeting half the problem. We are sidestepping unhealthy behaviors!



Source: IFTF, CDC

There may be good reason for this. It's really hard to get people to change their behaviors. Our motivational drivers have been tuned over thousands of years. During the last 100 years, the dynamics of survival have dramatically changed. The fact is, we spend very little time and physical energy securing the necessities of life. What used to be in balance—the physical energy required to secure the food and shelter that we needed to survive—has dramatically changed. Today, the low cost and ease of securing food, complicated with its high calorie content, is one-fifth of what it was two generations past.

Dan Buettner knows what he needs to do to live to be 100.

He lives in the Twin Cities metro. By most measurements, Dan is a very healthy guy. In 1986, along with his brother Steve and four friends, Buettner cycled 15,500 miles, traveling from Prudhoe Bay, Alaska to the extreme of South America—setting a Guinness record. Since then, he has logged a half dozen more 12,000+ mile cycling treks.

Riding a bicycle let Dan experience the world up close and at a slower pace. He spent time with people from all walks and cultures. And he noticed a few communities where people lived what appeared to be longer, healthier and happier lives. This got Dan thinking and resulted in his proposal to the National Geographic Society. He wanted to identify and visit communities around the world where people live long, healthy lives—well into their 90's and 100's. His goal was to discover their secret. Would these communities share characteristics or would each be different? What could be learned from these communities to improve our health?

Dan identified five communities, which he calls Blue Zones. Each Blue Zone community shares nine identifiable characteristics. These nine simplify into four:

Move naturally
Eat wisely
Live with purpose
Connect with others

Moving naturally means that you get good exercise during the normal course of your day. Eating wisely consists of meals from grains, fruits and vegetables and stopping when you are 80 percent full. Even a little alcohol can be beneficial. Living with purpose includes slowing down to meditate and be quiet while rising every morning with a strong sense of your important role in life. Connecting with others indicates that you are active in a community, taking care of your loved ones first and being part of the right tribe.

People in Blue Zones are living longer, healthier, simpler lives. Is it possible that technology can counteract our downward poor health trend? Can it inform us about what is good for our human system to help us live longer, illness-free lives? Can it encourage us to exercise more naturally during the day? Help make us be more aware of the things we're eating, over-eating, or snacking? Can it keep us connected with the ones we love most, with the tribe we belong to, with the friends that are doing the right things? Can it help us slow down? To change our behaviors and build learned habits? I believe technology can.

Technology for technology's sake isn't the point. It's about applying technology to help change our behaviors. Providing unlimited access to technology doesn't guarantee that the person will use it. In fact, wanting to use technology or choosing to use technology isn't the critical factor. What's critical is that if an individual desires to be healthier and motivated to take action, a support system is there to help. Technology can drive an ecosystem platform while supporting personalized interventions.

It is important to make a distinction between behavior and habits. A behavior is something you can observe and measure. The behavior can be a one-time event or repeated often. Habits are behaviors that have become routine. Habits are created through repetition and reinforcement.

Acquiring a habit starts as new behavior. If that behavior is enjoyable you might do it again, and then again, and then again. Where it may have initially taken conscious effort on your part—utilizing the executive capacity of the brain—to enact the behavior, through repetition it becomes habit. This habit no longer requires the executive mind to instruct the individual to do the behavior. Rather, through repetition it has been learned and therefore can run in the background. This is also why it's so hard to change a habit. Because in many

instances, you're not even aware you are doing it.

There are a number of scientific studies that demonstrate that habits are created and reinforced by the release of dopamine. In layman's terms, dopamine triggers a feel good response in the brain. Through repetition of a feel good behavior, the brain starts to anticipate the pleasure of the activity. This anticipation can also trigger the release of dopamine in advance of the action. This is why it becomes so easy to fall into a habit. Just getting into the situation, whether it's a familiar smell, a fond location, or specific friends, can trigger the feel good response and start you down the slippery path to an old habit.

Once you've learned how to ride a bicycle, you don't forget. This is true for many physical coordination activities, whether it's throwing a ball, riding a skateboard, swinging a golf club, or learning to ski or swim. This underscores another fact about habits. You really don't lose a habit. It's very easy to slip back into the habit. Strategies for healthy behaviors and acquiring new habits are most successful when the individual focuses on establishing a new habit that replaces an old one rather than trying to break an old habit.

Habits start with a behavior. That first actualization of a behavior is taken for a reason or motive. Becoming aware of the motivation behind a behavior is important. As you will see, motivation is the fuel of habits.

On a sunny California spring day in 1978, I rode my bicycle from student housing to my drawing class. At the start of the class, professor Jan Molenkamp asked a few simple questions about Hoover Tower – the iconic landmark located at the center of Stanford University. “Without looking, can you draw Hoover Tower's roof? Can you recall its shape, color, and texture?”

I was surprised. For the past three years, I had been a student at the University and ridden my bicycle or walked by Hoover Tower hundreds of times. Yet I couldn't confidently state the roof's shape or its color, or composition. While I'd seen it a hundreds times—I really hadn't.

Hoover Tower had become familiar. I'd paid little attention to it. It had recessed into my subconscious mind.

This is the way it can be with our health. Our health is dependent upon our day-in-and-day-out habits. Because habits are routine and we perform them unconsciously, we often don't recognize the actions we take to initiate the habit. Our habitual mind takes over, requiring little if any conscious thought.

Recognizing when we are in the act of stepping into a poor habit is critical to stopping it. It is all about paying attention. Establishing healthy behaviors that become routine is key for a healthy life. Using the fuel of motivation helps drives the repetition of a behavior to become a habit.

Technology can help us establish and maintain healthy habits by stimulating our motives and helping us pay attention to our behaviors.

The Futures Company and Health Ecosystems have created a novel health segmentation model. By interviewing thousands of individuals and cross-fertilizing various databases that contain purchasing records of those individuals, they have identified six distinct individual types based on (1) their health and wellness mindset and (2) their life, health, wellness, fitness and other goals. What's powerful about this segmentation is the high predictability of motivational drivers around health for each segment. This allows you to construct experiences that tap into the motivational fuel that encourages and reinforces healthy habits.

Technology, when applied appropriately, can support situational nudging of information, activities and connections that taps into the known powerful motivational drivers of the individual. It can be the antidote to the unhealthy environment it evoked.

We can use technology to build a collaborative ecosystem that supports healthy behaviors. The core ecosystem components are smartphones, wireless sensors, personal health records and social networks.

A friend recently asked me what technology would be most beneficial to the health and wellness of individuals and communities. I thought about it for a moment and then the American Express slogan, "don't leave home without it..." flashed through my mind.

I said, "If I leave my home without my wallet, keys, or my cell phone, I go back. This trio is my mobile kit. My mobile kit is personal and essential for navigating my community and world."



While today my mobile kit consists of three objects, within 10 years it will just be one device, a smartphone. Smartphones will unlock your car or finalize a purchase, or confirm your identification by a wave of the arm, a twist of the wrist and pressing a few buttons.

In our pockets (or purses) we have a device that, just a few

years ago, was called a supercomputer. Today, smartphones are wirelessly connected to the cloud (massive numbers of computers all interconnected via the internet) and go with us everywhere. We can monitor, if we choose, the actions and habits of our lives 24/7. There are literally hundreds of health and wellness applications that run on Apple's iPhone and Google's Android OS. They are rudimentary today but are getting better by the week.

Eighty-six thousand seven hundred ninety-nine runners participated in a worldwide 10K race sponsored by Nike on October 24, 2009. By the end of the day, runners ran a total of 1,291,084 kilometers. Racers selected their own race route and start time from anywhere on the planet. They ran as individual, community and country teams. The winning time was 33 minutes 59 seconds; run by a man living in Mexico whose online name is pendragon.

The event, named The Human Race, was organized and managed through the Nike+ website. Participants only needed to have a Nike+ account, and a sensor in their shoes that logs each stride linked wirelessly to their iPod or Nike SportBand. Racers uploaded their run details via the Internet as recorded by their iPod or SportBand. More than 2 million people have used the Nike+ system since its launch five years ago.

There are many other wearable sensors and devices that are designed to capture and record human health metrics.

Garmin manufactures a wristwatch and body strap that monitors pulse and tracks your location via GPS. Uploading your data via a wireless link through your computer lets you plot your exercise route on a map, along with changes in route elevation, heart pulse-rate, speed and overall time.

FitBit provides a clip-on motion sensor that functions as a pedometer and motion sensor. You can track your activity throughout the day and night while continuously indicating progress towards your physical activity goal. It records your body's movements while you sleep and thereby determines the time spent in the different sleep stages. This helps you see how exercise, caffeine or alcohol affects your sleeping patterns. When you are close to a wireless link station, the FitBit sensor automatically transfers the data to your computer.

HopeLabs created a motion sensor optimized for children. Schools equip students with the gDitty sensor, which then tracks a child's activity throughout the day. Classrooms compete to log the most exercise within a game environment. Students earn points, build out their avatars and win prizes for their classroom or school.

iTreadmill is an application for the iPhone that taps its built-in motion sensor, transforming the iPhone into a pedometer.

All these devices are designed to help you monitor vital biometrics. They help you pay attention. They monitor progress, let you set and achieve goals, receive recognition, earn rewards, compete, collaborate, learn, share and have fun. They fuel the motivations that develop and encourage healthy habits.

Personal health records are electronic data files for storing and accessing important medical and health records. Examples of the information you might find in your personal health record would include your vaccination records, operations you've had, any allergic reactions to medications you may have experienced, current prescriptions, broken limbs and your family health history such as diabetes, high blood pressure or breast cancer.

Most people's health records exist as paper-based files in their doctor's back office. There is a substantial effort underway to convert these paper files into electronic records or transition to fully electronic files. There are a multitude of medical software systems in use with several of the market leaders jockeying to become the electronic medical record standard.

Solutions often take a number of years to evolve through use and modification before they become a standard. Sometimes standards are legislated and other times the market decides based upon the use and clout of the market share leader. Many healthcare systems have their own 'home rolled' solutions running as part of their enterprise back office solution.

However, three 'self-standing' PHRs have been created: Microsoft's Microsoft Health Vault, Google's Google Health, and Dossia – an open source solution -- from the Dossia Consortium (whose founding partners include companies like AT&T, Intel, Vanguard Health Systems and Wal-Mart.) The driving philosophy is that a person should own and control their personal health information regardless of the firm they work for or which healthcare provider or doctor they use. They should be able to 'take it with them' if they change employers, and give access to persons or firms of their choosing to review, update or edit.

PHR adoption has been slow. Partially because there isn't an accepted standard and partially, from a consumer's perspective, there isn't a "there" there. Most people don't wake up in the morning thinking, "I should review my PHR!" Today, the information in it is pretty static and illness-centric. Your health record it isn't something you need to look at very often.

This will change very soon because the PHR has an important role to play in the health ecosystem.

I own a Blackberry Smartphone, an Apple iPod Touch, a Nike+ pedometer tracking system, a Garmin GPS wristwatch, and a FitBit

motion sensor is on the way. At my YMCA, I log into my FitLinks data site to record my exercise activities. My Plus 3 Network (+3N) account lets me capture my 'outside' exercise when using my Garmin GPS. +3N tracks my exercise minutes and converts my time into points, which are then converted into a charitable contribution, made to a charity or organization of my choosing. I'm generating lots of data that is spread all over the place. I have to input the information in multiple locations to stay in synch. It's a real hassle.

This is where the personal health record has a significant role to play. The PHR could be my health Mission Control. First, it is my secure data center, designed to be a hacker-proof Fort Knox. I am in control of who can access my health information. I don't have to worry about my insurance company getting access, or my employer peeking in. I control the flow and access of my data. I can give viewing and editing rights to my physician and my spouse.

I can assign automated permission so that my Nike+ site will automatically update my file after a run. It would auto export the running data to my FitLinks account at my YMCA so I earn points towards a membership fee reimbursement from my employer. The time spent and calories burned on the elliptical at the 'Y' can be sent to my PHR and then exported to my +3N account where it's converted into a charitable donation. It evokes a Twitter to my exercise buddies that I just burned 560 calories and posts an exercise ribbon on my Facebook wall.

With smartphones, sensors and a robust PHR we can collect relevant information about what we're doing 24/7, and learn in real time what we need to know. Social networks go a step further. They connect us with our tribe. They bridge distance and time. They help us discover new friends and stay in touch with long-term friends that are like-minded, who share similar goals for their personal health and their purpose in life. Embedded and accessible health content helps make good and timely health decisions possible. Healthy habits can be nurtured by friends and family through encouragement and enhanced by game play competitions. Crowd sourced data samples large populations and then through trending analysis can suggest courses of healthy action.

iWhisper is a start-up company based in Palo Alto, CA. The founder has deep experience in biotechnology, physics, and electronics. He has created a device to help people lose weight. It's designed to work with your smartphone. In solving his objective he may have also invented the world's best Bluetooth headset. The iWhisper headset can tell when you're talking or moving, and when you are quiet, resting or eating. It is comfortable, lightweight, attractive and wearable throughout the day.

The inventors are experimenting with virtual personal coaches that whisper in your ear, telling you to slow down when you are eating too

fast. Or alerts and records that you might be snacking since it is 2 p.m. in the afternoon and it detects your chew. It can notify a health buddy that you may be on a binge. Then your friend can send a voice whisper to hold you accountable. It's a system to help you pay attention to your habits and choose the intervention that best fits your style.

FarmVille is a social network-based game on Facebook. Within FarmVille you become a virtual farmer, planting and harvesting crops and selling them in a virtual marketplace. You can raise animals, build barns, and buy property. People by the millions (over 80 million) are playing the game. The game's design supports lots of collaboration between farmers. You can earn recognition and rewards for exceptional crop performance. You earn virtual money through the sale of other goods and services. You can reinvest your earnings to expand your farm. You can convert virtual money into real-world money. How is it that 80 million people dedicate so much time, so much mental energy and emotion to a virtual activity? Couldn't we invent a parallel game and call it MeVille? Where my energy and focus, along with my friends help nurture a healthy me. Where getting healthy can be fun and rewarding! Of course we can. FarmVille provides an excellent stage for observing human motivations in action.

I enjoy music. I listen to it often in the car, on airplanes and in my home. Music wasn't as prominent in my life before. Four years ago, I was given an iPod for Christmas. While I wasn't a music fanatic, the iPod was a very generous and valuable gift. Oddly, it took me almost four months to turn it on.

I grew up during the digital technology age—during a remarkable technology expansion. I owned one of the first Apple II computers, helped design the Apple III computer, and the first Macintoshes. I am an early technology adopter. I've earned many scars while spending countless painful hours learning new software interfaces, systems and getting tech gadgets up and running. I later realized that I had a subconscious anticipation that the iPod start-up learning curve would repeat the past.

Boy was I wrong. I unpacked the iPod and was delighted every step of the way. The attention to packaging detail was exquisite. Behind the scenes, Apple was teaching me something while building my expectations. Through the unwrapping experience, I was learning that my new iPod was special, valuable and that I should take care of it. It also signaled that if this much attention was paid to the packaging, then my new iPod would be delightful to use. I plugged the iPod into my Mac, which then told me what to do step-by-step. Within minutes I was lit-up and rock'n and rolling.

The iPod is much more than a music player. It integrates with the

iTunes application and the music store. The iPod is your personal, mobile access to the world's music ecosystem. Great attention to hundreds of details by the Apple design team makes the system simple, easy and enjoyable to use.

The same kind of deep attention to details, minimizing of complexity and expression of reward is necessary in creating a health ecosystem. We are in the pioneer days of the health ecosystem. At times it may be a little painful. But soon, with collaboration and inspiration, we will arrive at a solution that is as intuitive, rewarding, and as simple as Apple's iTunes ecosystem, but not one bit simpler.