Terms of Service

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the world of Big Data

by

Michael Keller and Josh Neufeld
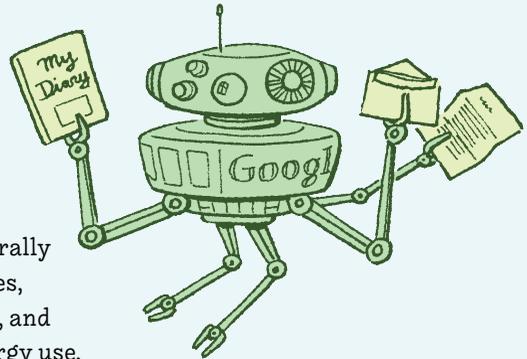
Terms of Service:

Understanding Our Role in the World of Big Data

By
MICHAEL KELLER and **JOSH NEUFELD**

Edited by
RHYNE PIGGOTT and **LAM THUY VO**

Big Data powers the modern world. With tools like FitBit tracking our every step and supercomputers like IBM's Watson helping Memorial Sloan Kettering treat cancer patients, we literally live it. Between our social media profiles, browsing histories, discount programs, and new tools like Nest controlling our energy use, there's no escape.

It's true humans have always generated, collected and analyzed data, from knowing which time of year to fish the rivers to realizing they should probably stop eating so much takeout. What's different today is the power of everyday devices to gather and analyze that data in real time. Unless one pays with cash, now it's possible, with very little effort, to go from saying "I eat a lot of takeout" to knowing with certainty "I spend 23 percent of my weekly paycheck on takeout food."

Big companies are collecting and using this information, too. This can be good or bad. Maybe we start making better choices about the food we eat and the money we spend. Or maybe an insurance company decides to increase its rate or even terminate a policy because it projects we'll have diabetes in 18 months.

We believe many folks want to learn more about these issues but are turned off by often dense and jargon-laden coverage.

So we made a comic!

What do we gain from Big Data? What do we lose? Co-produced by cartoonist **Josh Neufeld** and reporter **Michael Keller**, we hope this graphic novella will give you a good foundation to start asking your own questions.

Have any comments or stories you'd like to share? Please get in touch: **terms-of-service@aljazeera.net**.

— The Editors, October 2014

When Gmail debuted that year, privacy advocates were immediately up in arms.[1]

We write to urge your office to investigate Google's "Gmail" service. We believe that Gmail violates California Penal Code § 631, which governs eavesdropping on confidential communications...

Gmail made money by scanning the contents of your email for KEYWORDS that it used to serve targeted ads.

California state Sen. LIZ FIGUEROA was upset that people who weren't using Gmail--but were corresponding with people who were--would also have THEIR emails scanned, effectively being forced into the keyword-scanning system.

Google D n't be evil

Claiming that Gmail's system ran afoul of the state's Wiretap Act, Figueroa put forward a bill[2] requiring Google to obtain users' consent before any scanning could happen.

Google, ... seeks to require company, and any other which seeks to use a similar system, to obtain the sender's consent for outgoing messages, and the consent of the sender and the recipient for incoming messages, prior to scanning the email's contents for advertising purposes

Google co-founders Sergey Brin and Larry Page scoffed at Figueroa's fears that the company was retaining data over time.

What happens if some sort of robot came into your home...

Brin

"...and started reading your private materials--like your IRS statements, your diary or your private correspondence..."

My Diary

Googl

"...but then imploded--and all that went away."

POOF

Would you say that was an invasion of privacy?

Yes, that is intrusive!

Would [it] be able to read my emotions? Would [it] know that I was sad? Happy? Withdrawn?

Yes, and it can do a lot more than that!

I knew then that his definition of privacy and my definition of privacy were VERY different.

Figueroa was in the "penumbra of fear" because she was afraid of something the Google execs said they WEREN'T doing -- collecting a comprehensive digital dossier.

We were trying to alert people where technology was heading and let them participate in the conversation.

And at least give their thumbs up or thumbs down, not just [have it] forced on us and say, "This is the way it's going to be."

"And AL GORE played the negotiator--saying that the bill would go away."*

Gore was a senior adviser to Google. He was a fellow Dem, former VP...

Can you imagine going in? Here I am, and these two rock stars--plus AL?!

*Al Gore did not respond to repeated requests for comment. Google declined to comment for this story.

Hi. I'm Michael Keller, a reporter here at Al Jazeera America.

And I'm Josh Neufeld, a nonfiction cartoonist.

We're here to tell you a story about privacy you might not have heard before.

We'll look at how the power of peer pressure might change the nature of privacy.

We call it the Unraveling Theory...

As well as how some people think that the use of Big Data will lead to Big Discrimination.

But before we jump into that, former state Sen. Figueroa was just telling us what happened with her Gmail face-off in 2004...

Figueroa agreed to amend the bill, removing the "consent to use" provision and requiring only that Google not keep a dossier on you.

POOF

The robot HAD to self-destruct.

But even the amended bill didn't pass the California House and thus never became law.

I didn't have the votes. It was new. I was "stopping progress" and I couldn't go any further.

Maybe it was a good thing the bill never made it into law... It would have broken the Internet!

The point wasn't to "break" the Internet. Figueroa was just trying to codify the practices that Google claimed it was already doing.

It was a moment when legislators could have changed how the robots operate--to prevent a version of the Internet where advertisements read and track everything you do.

HMMM

You mean like the Internet is now?

Exactly.

Today, much more sophisticated robots follow us around.

NOT *AS* FAST* AS * LAST *WEEK

And it feels like people have no choice but to accept it.

And all because of Gmail?

What Gmail offered-- on a mass scale--was that for a benefit, people would give up new kinds of personal information.

There are a couple of professors in Colorado who have done a lot of thinking on these issues...

Let's zip over to Boulder to talk to them. You can explain more in the car on the way to the airport.

This whole Gmail thing got me thinking—what are the technologies that give us privacy concerns today but in 10 years we'll accept as commonplace?

There's a cybersecurity researcher named Dan Geer who has a helpful way of framing things.

He calls them Yesterday, Today, and Tomorrow Questions.[3]

A Yesterday Question would be "How would I feel about someone using my cellphone data to generate traffic reports?"

That's a Yesterday Question, because Google Maps already does that!

A Today Question: "How do you feel about auto insurance that's priced based on a daily readout of your automobile's black box?"

Oh, I've done that!

You have?

Yeah, man, I have a kid. Every penny counts!

Oh yeah? Well, what about a Tomorrow Question? "In what calendar year will compulsory auto insurance be more expensive for drivers who insist on driving their car themselves rather than letting a robot do it?"

Wait, for real? That could happen?

Haven't you heard about Google's driverless car?[4]

Google

If you remember when Gmail came out, it was a game-changer. It was the first interface that grouped replies so you could read an email chain as a thread.

Gmail

Friends finale! Inbox

Annie, Alex, and Me
We gotta get together to watch the
Reply Reply to all Forward

Alex, Annie, and Me
Count me in!!! Do you think that my really in the suburbs?
Reply Reply to all Forward

Annie, Alex, and Me
I'm so bummed it's ending. But I h
on our own coffeeshop. L

Plus, Gmail offered an unprecedented ONE GIGABYTE of storage. Before that, something like two mp3s ate up pretty much your entire storage...

When I was younger, I thought technology was the way of my generation. Changing the world was our mandate.

Now I wonder where it ever ends. When I was in high school, I didn't realize how something seemingly as small as the ideas behind keyword advertising...

...could affect how people get hired, what they pay for insurance...

HMMMMM

...or even civil liberties.

Denver.

Hold on, I gotta check in on Foursquare[5]...

Hey, don't roll your eyes. You could be talking to the new mayor of the Denver Airport! Want me to check you in too?

Ha, you're joking, right? That's what we flew out to Denver to talk about--how what you share about yourself doesn't stop at you.

When a person accepts a new technology, sometimes that requires other people to accept it too.

Huh? You mean like some kind of high-tech peer pressure?

Sort of--I'll let the expert explain...

People feel like they NEED to have a Facebook...

Julia Jester, Georgetown senior.

When someone has a party and invites all their friends, you just assume everyone has a Facebook. So you aren't constantly thinking...

Oh, Keith doesn't have a Facebook. Let me remember to invite him in real life.

Why not? That's really weird. Why don't you at least just HAVE one?

The market problem is that people are getting "paid" to disclose about themselves.

"Paid" in this case means you're getting a discount, or some free service--like Facebook.

Oh! Or like the Progressive Snapshot program I signed up for.

I put a tracker in my car for six months that recorded my driving habits--in exchange for up to 30 percent off my insurance premiums.

BEEP

It would take a while in a market as big as car insurance for the unraveling stigma to happen.
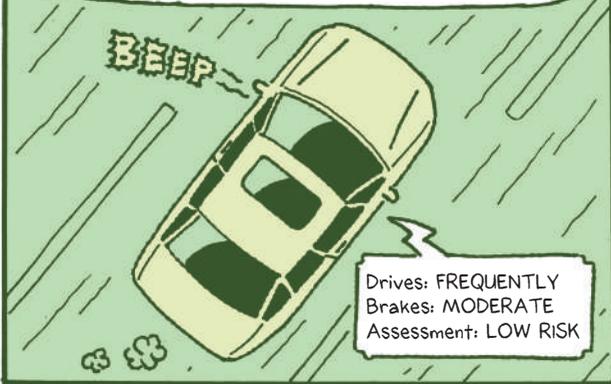
That said, it's really a Big Data question also. Progressive has REALLY accurate information about these million drivers who have signed up.

BEEP~

Drives: FREQUENTLY
Brakes: MODERATE
Assessment: LOW RISK

It can [also] learn a lot about the drivers who HAVEN'T signed up.

BEEP~

BEEP

Maybe it will just be GREAT that we all have trackers in our cars. But I don't think so necessarily.

Insurance has always worked under this idea of shared risk.

Right, people at different risk levels average out one another's costs in pools.

"If everybody's insurance were priced individually, perfectly..."

HIGH-RISK: $436.11/mo.

LOW-RISK: $32.56/mo.

LOW-RISK: $19.33/mo.

HIGH-RISK: $211.45/mo.

"...you're kind of eviscerating the idea of insurance pools."

And we haven't lived in that world before.

I think that's going to be a very strange world.

13

So what do you think of all this data collection that's going on?

Well, if you get something out of it, what's the problem? After all, if you don't have anything to hide...

I'm wary of the "nothing to hide" argument because...

...as law professor Daniel Solove puts it,[7] it makes...

...privacy about hiding BAD things.

And the answer to that is simple-- just don't do "bad" things!

So...you, Michael, don't want people to know what you're up to-- even if there's nothing unusual about it...?

Exactly. The point is...

WHO Gets to Tell a STORY About YOU?

Whether it's your car insurance company deciding how good a driver you are...

Or an employer judging how good a fit you'll be based on your social media profile...

QUORA

TWITTER

FACEBOOK

WORDPRESS

VINE

INSTAGRAM

I get it! It's like the dots on their own don't really mean anything--

--but then PEOPLE and computers connect the dots to write their own stories.

And with more and more companies collecting more and more dots, who knows HOW they're connecting them?

And if they come to some conclusion about me--that I have to pay higher credit card rates because I drive late at night...

...and they have SCIENCE and BIG DATA and STATISTICS on their side--that sounds like an argument I'm not going to win.

This data gets shared among different companies. Maybe there's a fact about you that's not BAD but just personal.

Like Peppet's colleague Paul Ohm says...

And for most of us, that database includes at least ONE fact that you REALLY don't want anyone to know.

"The DATABASE of RUIN"

THEY get to tell the story about who I am.

Remember our interview with danah boyd,* the social researcher at Microsoft who's been studying how teenagers use social media?

THE KITCHEN

She was talking about how teens hanging out on these semi-public online platforms often try to control the story about them.

Much like celebrities or other public figures try to control their images...

Exactly. One L.A. teen who boyd talked to explained why she posts so many pictures online--some of them quite embarrassing...

...so SHE can caption them, define their context and frame the story, BEFORE her friends put photos up and make their own narrative about her.

Makes sense-- I guess...

So this has different layers to it. On the light hand it's just, "I'm going to put a picture of me with a goofy face, like I can show that I don't take myself seriously --no big deal."

danah boyd

I'm going to put up a sexualized image of myself in a way that I can't actually be slut-shamed, because I'm going to call MYSELF out on that.

*danah boyd spells her name in all lower case.

Or I'm going to put up stuff about MYSELF that's really, really cruel --so I can elicit support and feedback.

spring.me   Feeds ⊙   Inbox ⊙   me   🔍

Why do I feel like such a big LOSER?   [Respond]

You are not! Kristy, we love you!

We believe in you, girl! Love u, K!!!

Krist...
+
"My past o...
was molde...
fill the...

Studies have consistently shown that kids care about privacy with regard to corporations and governments as much as adults--

--which is to say not very much at all.

"When it comes to young people, they're really clear. They'll give up WHATEVER to be able hang out with their friends."

And they don't feel like they have any choice about any of this.

So one way to get that power back is to try to define the story about you in a public way.
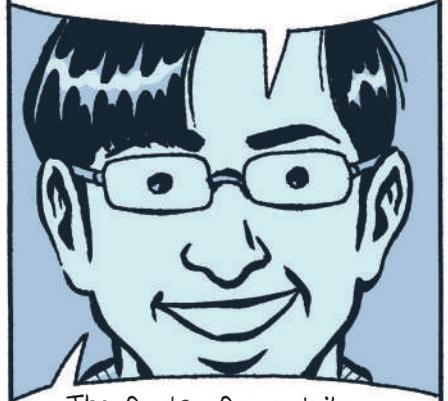
Even if you have nothing bad to hide, giving up privacy can mean giving up power over your life story and competing with others for control.

--but also when I create an entry for a place, it's like I've created NEW LAND--like an explorer.

DRAGON HOUSE CHINESE

CASH ONLY

SOY SAUCE

That makes total sense. But so does MY story. Because I can make up whatever narrative I want from your data dots!
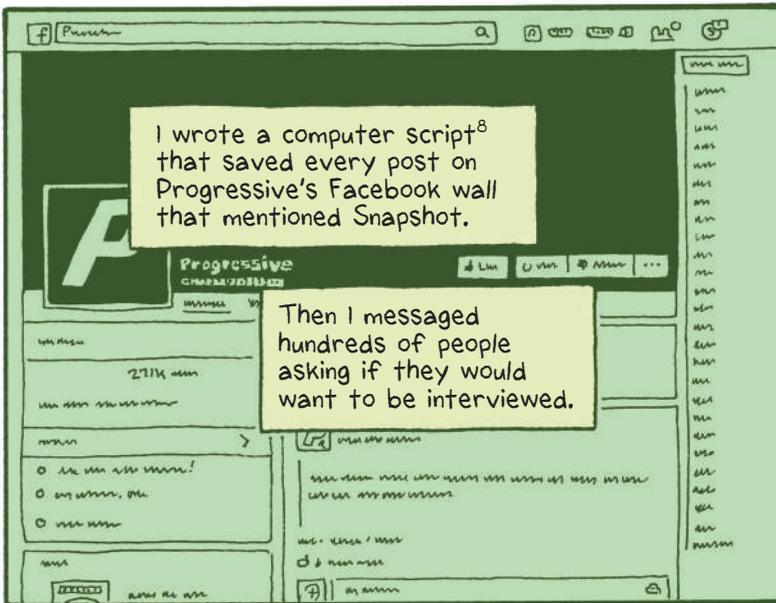
The facts of our daily life become the pillars of someone else's narrative about us.

Yeah, a lot of the issues in this piece make me think about what we as journalists do all the time.

Right. For instance, I found other Snapshot drivers to speak with through Facebook.

I wrote a computer script[8] that saved every post on Progressive's Facebook wall that mentioned Snapshot.

Progressive

271K

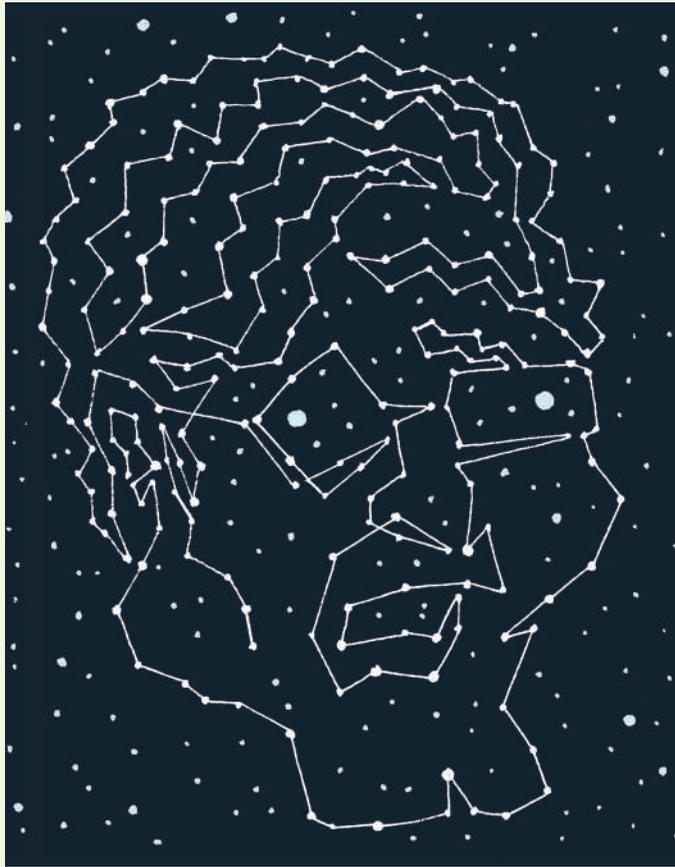Then I messaged hundreds of people asking if they would want to be interviewed.

I believe what I did was ethical. The comments were public. I identified myself as a reporter. And I didn't pester people who said they didn't want to talk.

But what if I weren't ethical?

Panel 1: Yeah. Now that I think about it, companies sure know a lot about me...

ican Apparel

Panel 2: The government has to follow rules, like the Fourth Amendment's right to privacy, etc. But companies don't.

Wait-- they don't?

Panel 3: Nope, the Constitution doesn't regulate consumer behavior. Except for certain protected classes like race and disability, companies are limited only by the terms of their privacy policies-- which you did or did not read.

formation to collect information to provide better services to all of our users from figuring out basic stuff like which languag speak, to more complex thing like which ads you'll fi erful or the people who matter most to you online. e collect information in two ways: formation you give us. For example, many of our servic require you to sign up for a Google account. When you do, w you for personal information, like your name, email address, t

Panel 4: So if a company doesn't like your speech or your political views, it's within their power to deny you access.

That might not be very profitable, but it's possible.

Panel 5: Many companies DO have strong religious or political affiliations.[9]

Chick-fil-A

THE ORIGINAL CHICKEN SANDWICH

Panel 6: So what CAN laws do?

That's a good question. Will there be another opportunity-- like there was with Google back in '04--to change how the robots track us?

We spoke some more about this with Scott Peppet and his colleague Paul Ohm.

I think a large part of meaningful privacy reform is convincing people that privacy is worth giving some stuff up for.

And to date, that argument is rarely heard in D.C.

It sometimes works, though. Peppet has written about how the Genetic Information Nondiscrimination Act--GINA--makes it illegal to use someone's genetic information for certain insurance purposes.

It's also illegal to, say, require employees to implant TRACKING CHIPS in their bodies.

Radio Frequency Identification

11.5 mm

And society penalizes discrimination based on completely public or observable traits like race.

MLK

You call these examples "dead body stories" because they show the actual harm so starkly.

The problem with laws that arise from "dead body" stories, they told us, is they cover only very narrow things--like implantable chips.

More comprehensive reform is hard to get through Congress. So what happens is, states pass their own patchwork of laws, looking to one another for workable solutions.

It seems like we're in a big waiting game... waiting for someone to get it right.

These experts told us about how California figured out one piece of it--data breach laws requiring that companies notify their customers if certain financial info is hacked.

Now 47 states have similar laws, and we're seeing the effects, like being notified of the recent Target breach.

This stuff is hard. I'm glad we're not lawyers. Let's head back to New York...
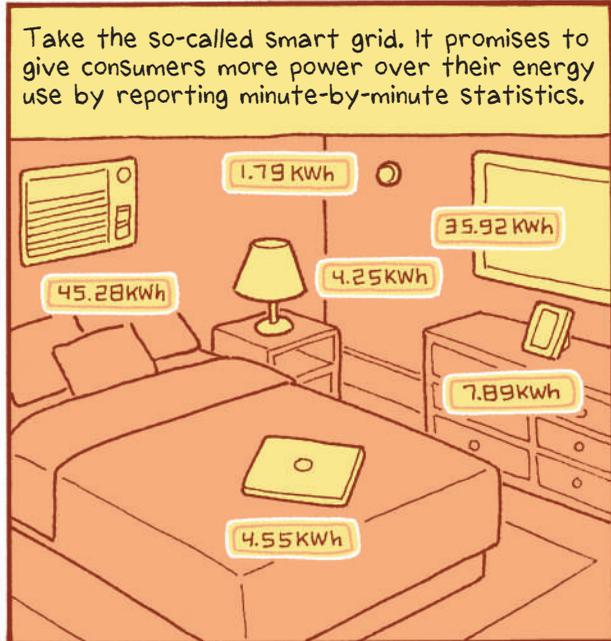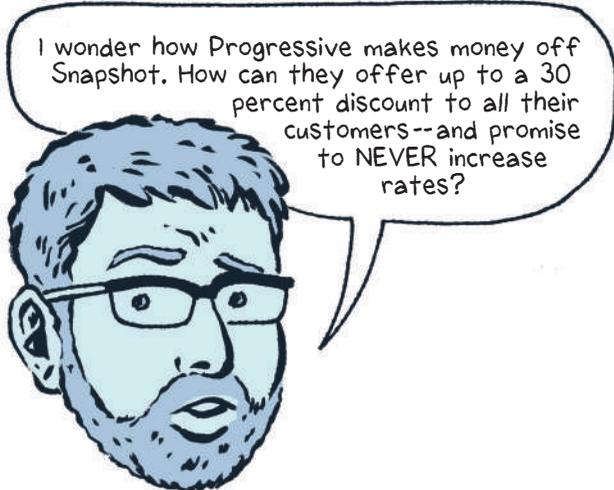
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IQ3oq3FlOfv8fXl/xpPyxQW8
tkVA2G3XHA==

?

Sorry. All this stuff is making me think I should start encrypting all my communications.

Whoa, dude. Paranoid!

What I was saying was, do you get the impression that some of these data-for-a-discount programs are too good to be true?

I've been thinking the same thing...

What if we're not getting a fair trade for our information?

To help figure this out, I called Alessandro Acquisti, a professor at Carnegie Mellon who studies these issues.

How might these data-for-a-discount programs play out?

Consider supermarket loyalty cards. You go to the grocery store under the idea of getting a discount.

He said studies have shown that these member prices aren't any cheaper when you compare them to inflation--or to prices at stores that don't have member programs.

FRESH FOODS REWARDS
4256 1122 4423 9909

If you DON'T use the card you're paying MORE than inflation.

Acquisti said that when customers give up their personal data, companies are able to get a lot more value from them.

"Value"?

Money.

Ah.

Take the so-called smart grid. It promises to give consumers more power over their energy use by reporting minute-by-minute statistics.

1.79 KWh

35.92 KWh

45.28 KWh

4.25 KWh

7.89 KWh

4.55 KWh

Acquisti said it could be that some people pay less, and some people pay more...

But in aggregate, we're ALL paying a little bit more, because more surplus is being extracted.

I'm not saying the win-win scenario is necessarily unrealistic.

But I find that the WIN-LOSS scenario is also a possible alternative.

So what he's saying is we should be skeptical of anything that promises cheaper prices for EVERYONE.

I wonder how Progressive makes money off Snapshot. How can they offer up to a 30 percent discount to all their customers--and promise to NEVER increase rates?

I asked Progressive those EXACT questions...

Snapshot
www@Progressive.com
to me.

Offering Snapshot allows us to attract new customers. One in three drivers who are eligible for Snapshot choose to sign up. Our data shows that those drivers who receive a discount stay with us longer. [...] No one pays more as a result of drivers receiving Snapshot discounts.

Is there any way that Progressive benefits from Snapshot other than attracting new customers and having better retention?

After analysis of billions of miles in driving data, Progressive has found that key driving behaviors--like miles driven, braking and time of driving--carry more than twice the predictive power of traditional insurance rating variables, like a driver's demographic profile, income and the year, make and model of the insured vehicle.

So they're saying the program helps them attract good drivers--and know more about how everyone drives.

Like me--and I got only a 5 percent discount!

HONK

HONK

A few months ago, I talked to Amanda Caswell, a young woman here in New York, about the idea of her employer collecting health data.

She uses a Fitbit to track her activities, her sleep habits and other personal metrics.

She had worked in marketing and was VERY familiar with data collection and tracking.

If your workplace started offering a program that would use your Fitbit data to help reduce your insurance costs, would you do it?

Sort of like the Progressive Snapshot program, they say, "We'll record your data for six months, at the end of which you might get a health insurance discount-- but we won't RAISE your premiums."

Hell, yeah. I would do it because I'm healthy right now.

I'm awesome. I bike, I walk, I'm healthy, I spin.

But I don't know... Then they have all my information.

See, it's hard... On the one hand, you have the tangible thing--the discount [you're] getting--and on the other hand, you have your personal information.

And that's the thing, you don't know [how] it could affect you, even though it's your personal information. It can't GET more personal.

So here we've been talking about how you find these services so creepy, and you collected similar data on people at your former workplace ...but you don't hesitate to opt in...

That's the pay to play. I have to pay you somehow in order to "play" for free.

Programs like what I discussed with Amanda--that ask for data and reward employees for good health behavior--aren't hypothetical.

"OBAMACARE" increases the incentives possible under these programs, such as weight tracking, quitting smoking, or "health-risk assessment,"[10] like they do at Caterpillar...

CATERPILLAR

A December 2013 market analysis by research firm IBISWorld[11] said that workplace wellness incentive programs will see "strong growth" and are currently worth $2.2 billion in yearly revenue.

REVENUES

4 billion
3 billion
2 billion
1 billion

2008 2009 2010 2011 2012 2013 2014 2015 2016

I spoke with a few other experts at Wharton and UCLA who expressed doubts that this information will NECESSARILY lead to lower costs.

They took issue with the way companies run these programs or how they structure incentives...

The main problem--the thing that throws the whole incentive business into question--is that it frames medical care in dollar amounts--

--which is different from what it's always been about--better health.

When a patient comes in with a heart attack, you don't want the doctor being concerned about the return on investment.
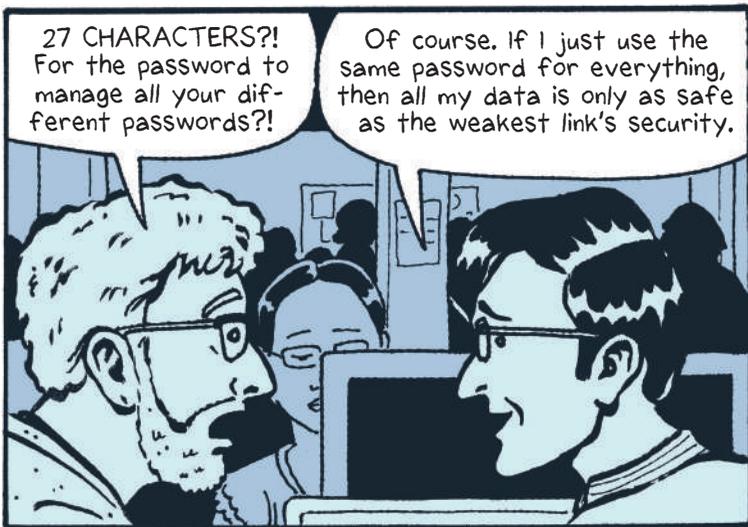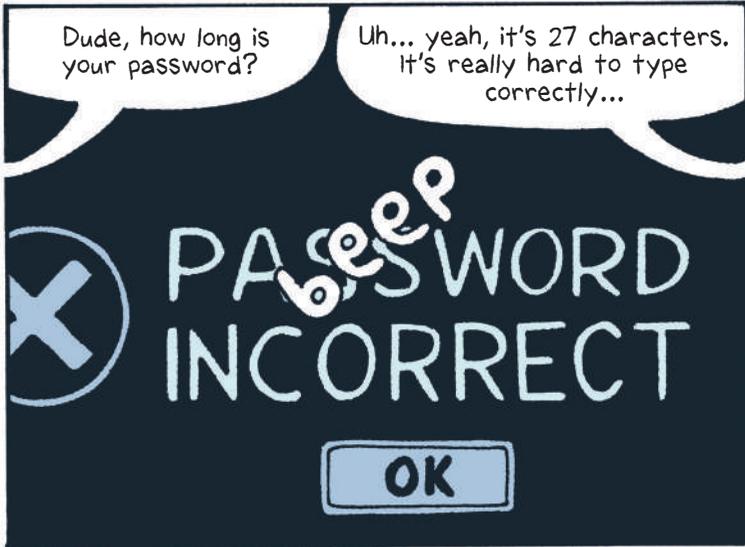
This is moving toward what Peppet is seeing as the next wave--that we use more and more of these devices in our daily life.

Things like FitBit that automatically share data with the parent company.

Peppet asked, "Why does it have to be that way?"

He makes the comparison between these kinds of devices and STAPLERS.

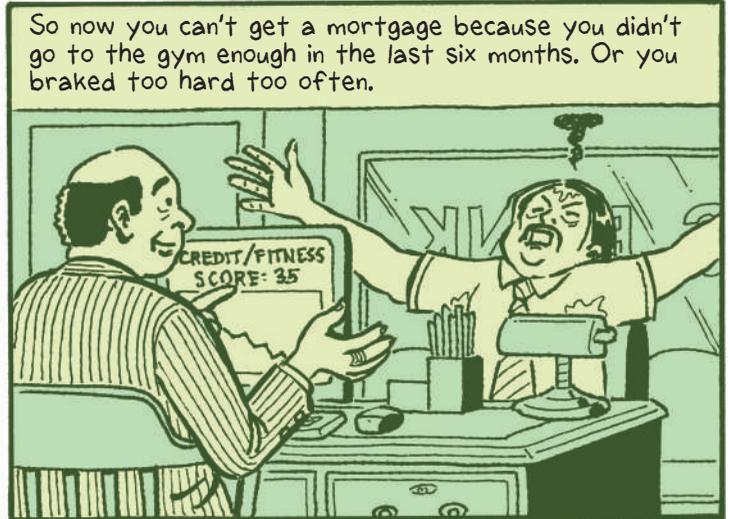When you buy a stapler, it's just a stapler. You just use it. It doesn't share information--about, say, how many staples you used or the text content of the papers you bound together...

Right. I remember. It's what Peppet calls the Internet of Things...

Can you talk about any of the things you guys do to opt out of all this, to protect your own privacy?

My biggest stand I've probably taken is I'm not on Facebook.

And I've never turned on location services on my phone.

This is the one thing I'm not gonna give you-- even though you're still getting it. I see it as this symbolic gesture against Google to say...

No, today is not the day to embrace my tech overlords!

Have you seen the blue Clear line at the airport?

So I wrote the Unraveling paper, right? But I signed up for Clear because I travel a lot.

So Clear is a company? Not the TSA, not the government?

This [is] not the government. This [is] a company. They have a deal with TSA that if they follow these rules, they can let people through the line.

And when I signed up for Clear, I get this little card.

SCOTT R. PEPPET

Clearme.com

CLEAR

They scan your iris, and they take your fingerprint. And when I walk up to the Clear line and I shove this in the little machine and I put my finger on the thing, it verifies instantly that it's me--and I walk through.

So I'm standing there signing up for this thing...

OK, now I'm going to read your iris.

Oh, my God, this is the first time any company has asked me for an iris scan.

I'm going to remember this... 'cause 20 years from now...

But by necessity you're sharing it with the government...

Well, you know, if I read the policy--which I didn't--I might know whether they share it with them.

Even if they don't share it with them, it could still be subpoenaed.

This issue about subpoenas. If we were getting divorced and I wanted to know what you had been up to--would I subpoena your Fitbit data and your Progressive Snapshot data?

Sure, all day long.

Peppet said he heard that a credit rating company was creating a DRIVING score that they can use to infer your CREDIT score.

So if they see you're a good driver, they might say you're a better credit risk.

Well, isn't that obvious?

Exactly! It's so obvious that it seems like a no-brainer--like why wouldn't they already be doing that? But Peppet was saying that if you think it through, it leads to just such a different world from what we're used to.

So let's say someone develops similar correlations between your FitBit data and your credit score. People who aren't consistent about exercise aren't that healthy. Maybe they don't repay their loans.

So now you can't get a mortgage because you didn't go to the gym enough in the last six months. Or you braked too hard too often.

CREDIT/FITNESS SCORE: 35

These correlations also bring with them a lot of civil rights issues...

Civil rights? How so?

Let's say your social network--who you're friends with, etc., their jobs, etc.--was factored into your credit rating.

Because people who have successful friends are more stable.

Isn't that a saying? "Show me who you walk with, and I'll tell you who you are?" Esmeralda Santiago?

Right. But that's really problematic. You should be able to associate with whomever you want--and not be penalized just for knowing someone.

What kind of society does that look like? Any potential new friend could harm you if they turn out to be anything but a sure thing.

Or what if they record not just how often you drive but WHERE you drive? Which neighborhoods...

Exactly. And how much does the model let you change, let you evolve? How easily can you go from being a high-risk person to a low-risk person?

Yeah. Can some people make those jumps more easily? How is that calculation made, anyhow? Don't we have a right to know how it's made?

That's the thing. We can see the items in our credit report--but we largely DON'T know the secret formula used to produce the credit score.

Now multiply that by a hundred--a thousand!--for all the other data out there about you.

Maybe we've been given a false choice between opting in and giving up control over how that information is used--

--between sharing everything and being left out.

And like data breach laws, if there's a reasonable alternative that changes incentives for companies to NOT use data in uncomfortable ways.

To let staplers just be staplers.

Slingfine

I remember I asked a related question to Peppet...

I'm wondering... as the general public becomes more and more aware of being tracked and as we start to think of ourselves as data points...

How does that affect our sense of self?

As Amanda Caswell said, it's the tangible BENEFIT, like getting free access to Facebook or Twitter, versus...

...the intangible loss of something we really can't measure.

...like, are we living, breathing human beings-- or just bits of data being shared?

I think those philosophical questions are going to become very practical.

At the moment they seem very abstract--

Oh, gee, at some point in the distant future, our understanding of human existence will be different.*

I don't think that point is so far away. I think already we're starting to feel like...

I had to get comfortable with Gmail...

OK, I had to get comfortable with Facebook.

Huh, now I have to get comfortable with the NSA.*

But you move into this physical world, and I think that the oppressive feeling--the change in your behavior--is going to start to feel odd...

...more claustrophobic.

Apple Pay

GOAL

Apple Pay

Jane

Apple Pay?

Fitbit

nest

72

Nest thermostat

Progressive Snapshot

ENDNOTES

1 p. 2, panel 1: The 2004 letter privacy advocates sent to the California Attorney General. **http://epic.org/privacy/gmail/agltr5.3.04.html**

2 p. 2, panel 3: Senator Figueroa's proposed bill, SB-1822. **http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200320040SB1822&search_keywords=**

3 p. 8, panel 2: Geer, Dan. "Tradeoffs in Cyber Security." 2013. *UNCC*. **http://geer.tinho.net/geer.uncc.9x13.txt**

4 p. 9, panel 2: Jaffe, Eric. "The First Look at How Google's Self-Driving Car Handles City Streets." 2014. *The Atlantic's CityLab*. **http://www.citylab.com/tech/2014/04/first-look-how-googles-self-driving-car-handles-city-streets/8977/**

5 p. 10, panel 1: Foursquare has since split into two apps, **Foursquare** and **Swarm**, which focus on location reviews and sharing check-ins with your friends, respectively.

6 p. 11, panel 1: Peppet, Scott. "Unraveling Privacy: The Personal Prospectus and the threat of full disclosure." 2011. *Northwestern University School of Law*. **https://www.documentcloud.org/documents/1293348-unraveling-privacy-the-personal-prospectus-and.html**

7 p. 14, panel 3: Solove, Daniel. "Why Privacy Matters Even if You Have 'Nothing to Hide.'" 2011. *Chronicle of Higher Education*. **http://chronicle.com/article/Why-Privacy-Matters-Even-if/127461/**

8 p. 20, panel 4: FaceLift: A library for scraping Facebook posts by keyword. **http://github.com/ajam/facelift**

9 p. 21, panel 5: Zimmerman, David. "Chick-fil-A Increases Donations to Anti-Gay Groups." 2013. *Boston Spirit*. **http://www.boston.com/lifestyle/blogs/bostonspirit/2013/03/chik-fil-a_increases_donations.html**

10 p. 29, panel 2: Wieczner, Jen. "Your Company Wants to Make You Healthy: A look at the pros and cons of the most popular wellness programs used by companies." 2013. *Wall Street Journal*. **http://online.wsj.com/news/articles/SB10001424127887323393304578360252284151378**

11 p. 29, panel 3: "Corporate Wellness Services in the US: Market Research Report." 2013. *IBISWorld*. **http://www.ibisworld.com/industry/corporate-wellness-services.html**

12a/b p. 40, panela 2 & 4: These panels are an imaginary representation of how a typical person might respond to the way these new forms of tracking are changing our daily existence. The words are Peppet's.

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