

Conversation with  
Fulton T. Armstrong

Who's Spying on YOU?  
(and How to Protect Yourself)

# Spy Wars

Are you a target?

YES!!!

Governments

Political organizations

Commercial interests

Hackers

EVERYONE wants your information!!

## Info we provide wittingly and SEMI-wittingly:

Almost anything on “social media”  
App user agreements  
ISP service contracts

Store “loyalty” cards  
“Free” subscriptions  
Credit cards

They’re not exactly lying to us, but  
have we consciously consented to ... ???

Targeting  
Profiling  
Location tracking/analysis

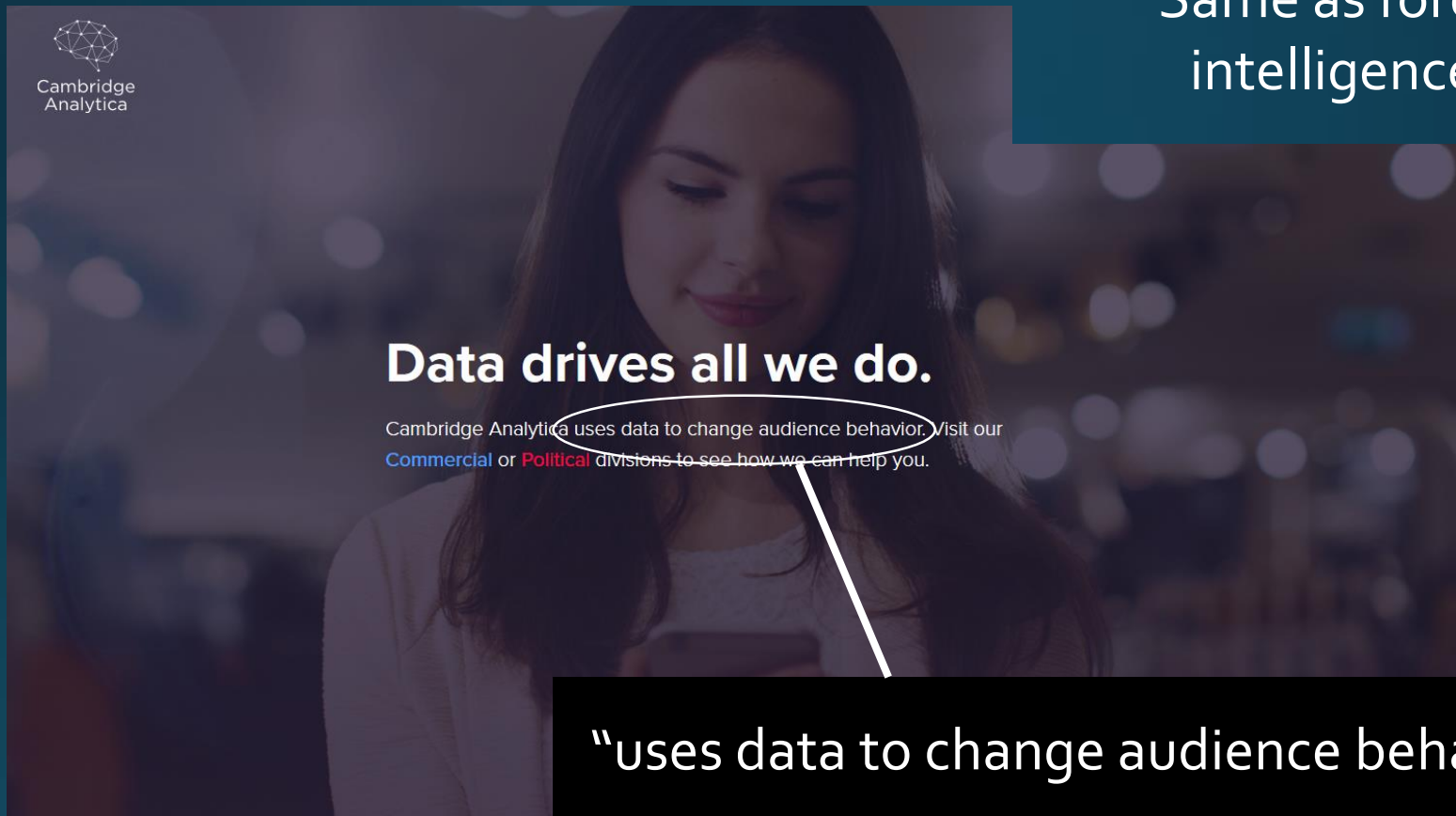


Info they use and sell

# Political candidates want your info

Example: Cambridge Analytica

Same as foreign intelligence!!!



Cambridge Analytica

**Data drives all we do.**

Cambridge Analytica uses data to change audience behavior. Visit our [Commercial](#) or [Political](#) divisions to see how we can help you.

“uses data to change audience behavior”

# “Data-Driven Campaigns”

## We find your voters and move them to action.

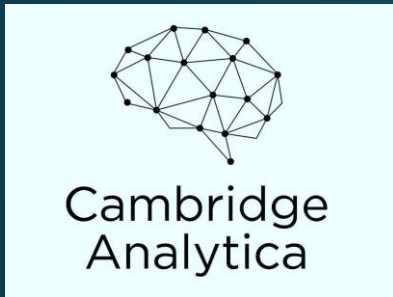
CA Political has redefined the way you can win. If you do it better, you can achieve greater results.

**“There are no longer**

- Frank Luntz, Political Pollster

Achieved “the most remarkable victory in modern U.S. political history” ...

“Analyzing millions of data points, we consistently identified the most persuadable voters and the issues they cared about. We then sent targeted messages to them at key times in order to move them to action.”



## SCANDAL

*NOT charged with objective:  
"To move voters to action"*

- Cambridge Analytica allegedly stole data from 87 million FB accounts
- UK fined FB £500k (US\$660k) in July for failing to protect privacy
- FB allegedly lied about deal with CA

## Companies want your info

Mostly for marketing purposes, but very invasive

- "Individual targeting"
- "Behavioral targeting"

HOW MANY TIMES ...  
have you been bombarded  
with ads for something  
you searched for?

# EXAMPLES

Search about health issue on Google

Get e-mails advertising products

Research destination on TripAdvisor

See mysterious increase in travel ads

Buy something on Amazon

Get ads for other "recommended products"



## *Companies know more than we think*

Common anecdote:

The grandmother bombarded with “enlargement” ads because a curious grandson using her computer clicked on a link.

## *Companies know more than we think*

Another example:

Target Department Store knew of daughter's pregnancy – and started sending customized ads – before parents knew

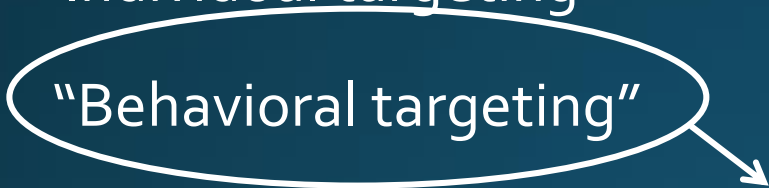
- She'd used a gift card associated with family's account.

*Companies often know more about intimate health issues than spouses know.*

## Companies want your info

Mostly for marketing purposes, but very invasive

- “Individual targeting”
- “Behavioral targeting”



DEVELOP PROFILES ...  
To figure out how to  
manipulate us ... and  
“move us to action” in  
their commercial interest

# Companies want your info

What they do with it

Develop profile of you

race  
income  
postal code  
preferences  
interests  
political views

Sell it to advertisers  
political action groups  
foreign governments  
(witting or not)

**EXAMPLE:**  
Lists and  
databases, like  
"Targeting  
Options" for  
Facebook  
advertisers

## Like government intelligence

“Intelligence” ... information and analysis

- collection, compilation
- patterns
- vulnerabilities, opportunities

Influence ... covert action

- marketing, targeting
- manipulation



Imagine what a business (or hostile person/group/country) can do with information about you!



Imagine what you could do to a person if you knew his/her ...

internet searches

credit rating; debt

home value

health and family issues

"extra" relationships

purchases

party registration

memberships

Facebook, Twitter, etc., posts

Facebook "Likes"

education

car year and brand

news diet

# Isn't it all anonymized??

Yes ... and ... No

*Some* collectors do not put your name on the data

BUT

*Almost all* exploiters make a personal profile

- cookies
- "fingerprinting"
- other techniques



## Portrait of a Tech Writer as a Young Man

by Carl Miller, BBC

1,500 pages of data from 80  
companies

- Age of boiler
- Likelihood of interest in gardening: 23.3%
- Interest in prize draws and competitions: 11%
- "Animal/nature awareness": low
- Technology audience segmentation: "young and struggling"
- Household interest in book reading: "regular"
- At one moment was a go-getter, an idea-seeker. Then love aspirer, disengaged worker
- Triggered a "Netmums - women trying to conceive" event

## EXAMPLES

The “news” articles that appear on your screen are also targeted.

Algorithm fine-tuned for balance between ...

- What they know you agree with (so you'll read it)
- What they want you to do (because that's what they're paid for)

## New York Times “Privacy Project” Experiment

Purchased a series of on-line ads that revealed targeting profiles.

**This ad thinks you’re trying to lose weight but still love bakeries.**

LIKELY BROWSING HISTORY

LIKELY CREDIT CARD HISTORY

## New York Times “Privacy Project” Experiment

Purchased a series of on-line ads that revealed targeting profiles.

**This ad thinks you’re female, a registered Democrat and are likely to vote for the sitting president.**

LIKELY VOTER REGISTRATION

LIKELY BROWSING HISTORY

# HOW DO THEY GET THAT INFO ON US?

Cookies

IP addresses

“Click bait”

Searches (in browser and on sites like Amazon)

Purchases

Posts on social media

E-mails

a) through on-line services, and

b) you open (with graphics displayed)

# Cookies

## “Session cookies”

- Remember what you’ve searched for, put in basket, etc.
- Deleted when close browser

## 1<sup>st</sup> party persistent cookies

- Remember logins and preferences

## Tracker cookies (3<sup>rd</sup> party persistent)

- Created and accessed by companies that collect against you – and pay websites for that privilege

*They also know what site you came from.*

# Internet Protocol (IP) address

**151 . 124 . 47 . 100**

**IPv4**

- four numbers, each with one to three digits
- single dot (.) separating each number or set of digits
- each from 0 to 255

<http://www.bmbs.org> → DNS server → IP address

# Click Bait

The screenshot shows a CNN website layout. At the top, there's a navigation bar with categories like U.S., World, Politics, Money, Opinion, Health, Entertainment, Tech, Style, Travel, Sports, Video, and Live. The main content area features several news stories. A prominent article is titled "15 million Floridians in the dark" with a sub-headline "This is what it looks like in the Caribbean after Irma". Other articles include "Imra's aftermath", "Apple's \$999 iPhone X: Face ID and no home button", "Hillary Clinton's memoir", "Clinton's really not running again -- and her book is proof", "Love is out there...", "Hillary Clinton", "Lessons against friends and foes", "Michelle Obama reminisces Beyoncé's new album", "NCAA helps key West residents check their property", "Richard Branson films devastation on private island", "Harrisburg, Pa. is still churning out of sea", "Small plane crash lands into tree", "For News week: Apple's MacBook lid for Sky", "Trump: North Korea sanctions 'not a big deal'", "Opinion: Barron turned the tables on liberals", "Hillary Clinton's memoir", "Love is out there...", "Hillary Clinton", "Lessons against friends and foes", "Michelle Obama reminisces Beyoncé's new album", "NCAA helps key West residents check their property", "Richard Branson films devastation on private island", "Harrisburg, Pa. is still churning out of sea", "Small plane crash lands into tree", "For News week: Apple's MacBook lid for Sky", "Trump: North Korea sanctions 'not a big deal'", "Opinion: Barron turned the tables on liberals".

**15 million Floridians in the dark**  
This is what it looks like in the Caribbean after Irma  
For some from western, Irma stole shelter from the storm

**Imra's aftermath**  
Richard Branson films devastation on private island  
Harrisburg, Pa. is still churning out of sea  
Small plane crash lands into tree  
For News week: Apple's MacBook lid for Sky  
Trump: North Korea sanctions 'not a big deal'  
Opinion: Barron turned the tables on liberals

**Apple's \$999 iPhone X: Face ID and no home button**  
Apple's new iPhone X and iPad Pro  
Seattle mayor resigns after 99th United States election  
Do you really... and no... to really at Trump's...  
The... 'stuff' for 'best'...  
Small plane crash lands into tree (2)  
For News week: Apple's MacBook lid for Sky  
Trump: North Korea sanctions 'not a big deal'  
Opinion: Barron turned the tables on liberals

**Hillary Clinton's memoir**  
Love is out there...  
Hillary Clinton  
Lessons against friends and foes

**Clinton's really not running again -- and her book is proof**  
Analysis: Is 'What Happened' actually what happened?  
Opinions against friends and foes

**Love is out there...**  
Hillary Clinton  
Lessons against friends and foes

**Michelle Obama reminisces Beyoncé's new album**  
NCAA helps key West residents check their property  
Richard Branson films devastation on private island  
Harrisburg, Pa. is still churning out of sea  
Small plane crash lands into tree  
For News week: Apple's MacBook lid for Sky  
Trump: North Korea sanctions 'not a big deal'  
Opinion: Barron turned the tables on liberals

**Health & Fitness**  
HEALTH NEWS WEIGHT LOSS FITNESS NUTRITION MEDICAL MENTAL HEALTH WELLNESS VOICES SLIM DOWN WORKOUTS EDIT

**Jeess lost 75 lbs. by doing this one inspiring thing every day**  
PopSugar

**Eating enough of these two nutrients may help lower your risk of lung cancer**  
Bicycling

**The scary anxiety symptom you might be overlooking**  
The Active Times

**More than 100 vegetable products recalled for possible listeria**  
TODAY

**Aubrey O'Day responds to critics over plastic surgery**  
Allure

**Daphne Oz shares a relatable abs photo 10 weeks after giving birth**  
Health.com

**3 foods you should eat at breakfast if you want to lose belly fat**  
PopSugar

**Lena Dunham reveals she has Ehlers-Danlos syndrome**  
CNN

**Paid Content**  
Finding the Best Crossover SUV of 2017  
The New Health All That Doctors Are Talking About  
George Clooney's Home Is Beyond Stunning  
These Real 'Titanic' Photos Are Simply Heartbreaking

More from CNN





One more  
way!!!

## Bluetooth Beacons in stores

- Equipment provided to stores for free by Google, Facebook, ad companies, et al.
- Not just operated by “host” store; others “piggyback”
- Track how long you spend in each part of the store
- Used to target ads at you

## How they take over

The e-mail attachment  
(or download)  
with virus, malware, or other  
destructive code

Example: WannaCry (2017)

## Other Threats

Governments (or stolen software)

Hackers

Fake links with malware

Fake anti-virus

Spearphishing

### SPEARPHISHING

- Gets you to go to a shadow site with a trap
- Requests a password
- Captures access to your system or e-mail



## Someone has your password

Hi William

Someone just used your password to try to sign in to your Google Account  
[REDACTED]@gmail.com.

### Details:

Tuesday, 22 March, 14:9:25 UTC

IP Address: 134.249.139.239

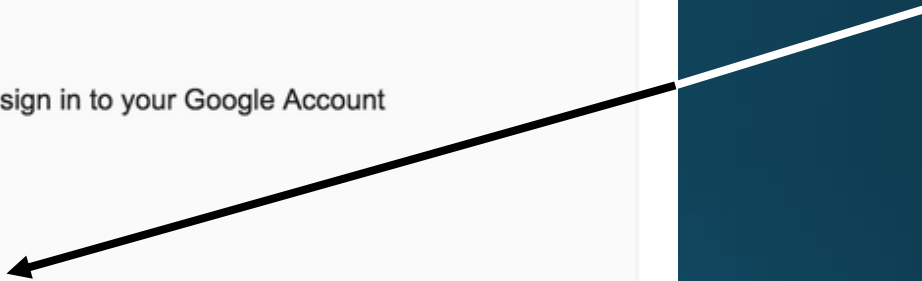
Location: Ukraine

Google stopped this sign-in attempt. You should change your password immediately.

[CHANGE PASSWORD](#)

Best,  
The Gmail Team

Provides detail to  
make it look  
credible



A screenshot of the phishing email.

EXAMPLE:

NSO Group is a leader in the field of Cyber warfare. The company works with military and homeland security organizations in order to enhance their technological abilities in both the offensive and defensive cyber warfare arenas.

NSO GROUP



The system introduces a powerful and unique monitoring tool, called Pegasus, Which allows remote and stealth monitoring and full data extraction from remote targets devices via untraceable commands.

Mexico, Panama, and MANY, MANY other governments.

# YET ANOTHER EXAMPLE?

Friend's phone  
reportedly was taken  
over by Pegasus



Jamal Khashoggi



Oct '18

**WHY CARE???**

## Identity theft

The numbers 17.6 m Americans compromised at least once annually

*U.S. DOJ  
Bureau of Justice Statistics*

The costs

- Direct financial losses (avg \$1,343)
- Costs to banks, vendors (\$15.4 b)
- Hurt credit rating (discovered after)
- Hassles
- Hurt reputation (purchases on record)
- Emotional toll



## Other reasons

- Indirect costs:
- National security
  - Corporations
  - Political institutions
  - Non-political institutions (e.g., media)
  - Credibility of democracy