WHAT INFLUENCES BEHAVIOR MOST?

Watson: Your environment!

Binet: Your natural intelligence!

Jung: Your feelings!

Bandura: Other people!

Freud: Your unconscious primal urges!
Humans will always do what is in their best interest...

...given all available information
...and no significant bias
...and no significant stressors
...and no strong outside influence.

😊
Most breaches can be traced back to choices:

- Clicking a link
- Opening an attachment
- Enabling office doc macros
- Installing a browser plugin
- Visiting a website
- Disregarding an alert
EXTERNAL PEN TEST SUCCESS

Users out of scope
<10%

Users in scope
100%
CHOICE

Foods in the front sell more. Do you…

A. Put least popular foods up front
B. Put more popular foods up front
C. Put healthier foods up front
D. Randomize the foods
CHOICE ARCHITECTURE

- **Triggers** provide opportunities for choices.
- **Nudges** are arrangements of choices favoring a specific outcome.

- A buffet presents a trigger to select food
- The placement of **corn** in the first spot nudges you to select it
CHOICE ARCHITECTURE

- **Triggers** provide opportunities for choices.
- **Nudges** are arrangements of choices favoring a specific outcome.

  - A shut down dialog triggers a choice to shutdown, reboot, log out, or update and shut down.
  - The user is nudged to **update and shut down** because it’s the default choice.
**Libertarian Paternalism**

Libertarian Paternalism is the idea that it is possible and legitimate for someone to affect behavior while also respecting freedom of choice.
CHOICE

Foods in the front sell more. Do you...

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1: DEFAULTS

A default options is the simplest opportunity for a nudge.

**Organ Donors in the US (Opt In)**
15%

**Organ Donors in Austria (Opt Out)**
90%
DEFAULTS RELAY EXPERTISE
USER WARNING DEFAULTS

Your connection is not private

Attackers might be trying to steal your information from www.carwow.local (for example, passwords, messages or credit cards). NET::ERR_CERT_COMMON_NAME_INVALID

☐ Automatically report details of possible security incidents to Google. Privacy Policy

ADVANCED

Back to safety
DEFAULTS REVEAL PRIORITIES
2: INCENTIVES

Most decisions are driven by incentives.

To present the right choices to the right person, ask these questions:

- Who uses?
- Who chooses?
- Who pays?
- Who profits?
Based on the average salary of the attendees, this meeting will cost: $480/minute

Current Meeting Cost:
30 Minutes | $14400
3: UNDERSTANDING MAPPINGS

Choices should mapped to benefits or consequences

Complex choices:
- Disk size
- Internet Speed

Simple choices:
- Songs/photos stored
- Number of computers
UNCLEAR MAPPING
4: GIVING FEEDBACK

Many of the decisions we make are done on “autopilot” via automatic thought processes.

Providing feedback can **force** decisions to be made using deliberate reflective thought processes.

Feedback doesn’t always help the current decision, but it can improve the next one.
AUTHENTICATION FEEDBACK

Welcome to Ubuntu 14.04.5 LTS (GNU/Linux 4.4.0-119-generic x86_64)
* Documentation: https://help.ubuntu.com/

0 packages can be updated,
0 updates are security updates.

Your Hardware Enablement Stack (HWE) is supported until April 2019.
Last login: Wed Apr 11 17:26:22 2018 from 10.2.2.113

Where You're Logged In

Mac · Oakwood, GA, United States
Chrome · Active now

iPhone X · Oakwood, GA, United States
Facebook app · December 2 at 5:44pm

Login > Settings > Security and Login Settings
5: STRUCTURE COMPLEX CHOICES

As choices become more numerous, people will adopt simplifying strategies.

- They won’t always choose the best strategy (by convenience or ignorance).

- You should structure it for them based on critical factors
OVERSIMPLIFICATION
Decisions can create an opportunity for error. This must be accounted for.

When chip-based credit cards came out, people tended to leave them.

Now, most terminals have **forcing functions** that require card removal before the transaction will process.

How to use a chip-enabled terminal:

1. **Insert the chip end of your card** face-up into the terminal.
2. **Approve the transaction as normal.**
3. **Remove your card when prompted.**
EXPECTING PASSWORD ERROR

IT Security: You must change your password every 3 months!

User Passwords:
- Spring2018
- Summer2018
- Fall2018
- Winter2018
- Spring2019
- ..
CONCLUSION

- Most security practitioners are choice architects.
- The architecture of our choices has direct implications on the security of our networks.
- By skillfully nudging users and security practitioners, we can protect people.

Remember NUDGES:
- iNcentives
- Understanding Mappings
- Defaults
- Giving Feedback
- Expect Error
- Structure Complex Choices
THANK YOU!

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