Digital Addiction & Dark Design Patterns

DON'T BE A UX A$$

Unless you're cool with that and want the $$

CSCI-494: Human-Computer Interaction
Spring 2021

Guiding Questions

- **Why is this a problem?**

- **What even is the problem?**

- **What should be done?**

Food for Thought…

Where do big software companies in 2021 get most of their revenue, especially companies whose service is "free?"

Why is this a problem?
The Modern Big Tech Business Model

The business model of software companies over the last decade incentivizes the amount of time a user is interacting with the software, not just the number of downloads or applications sold.

As such, digital addiction is not by accident-

it is by design.

These designs are what we refer to as <u>dark designs</u>.

Why is this a problem?
The Benefits of Habit-Forming Products

- **Food for Thought: Why specifically do tech companies want you addicted to their products?**

- **Habit-forming products allow companies to:**
  - Sell your attention on their product to advertisers.
  - Charge a premium price.
  - Have a competitive advantage.
  - Increase growth through network effects.
  - Increase customer's lifetime value (especially with subscription services).
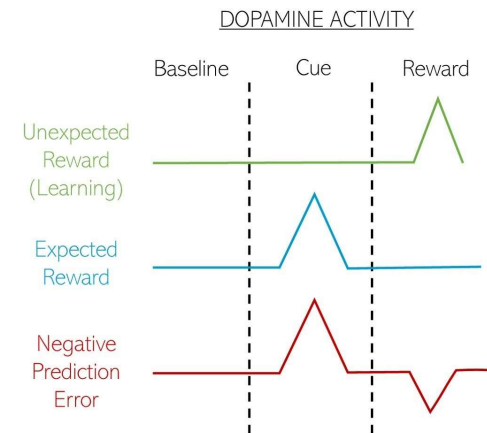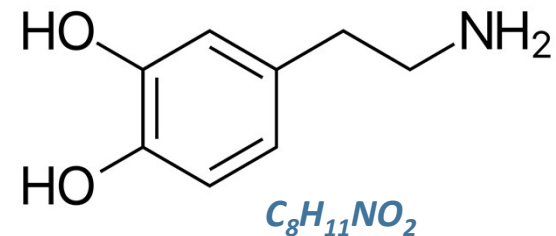 - Increase revenue through microtransactions.

What even is the problem?
The Dopamine Theory of Addiction

- Dopamine is a neurotransmitter (a chemical messenger) that plays a role in how we experience pleasure.

- When events we perceive as "good" happen or are expected to happen, dopamine is released.

- The recurrence of these events creates a feedback cycle that makes us seek out the events again.

- Physiologically, this is the basis for rewarding behavior and forming habits.

- **Food for Thought: How do you think dopamine may have helped our species evolve?**

- However, the ***dopamine-driven feedback loop*** is the basis for addiction.

$C_8H_{11}NO_2$

DOPAMINE ACTIVITY

	Baseline	Cue	Reward

Unexpected Reward (Learning)

Expected Reward
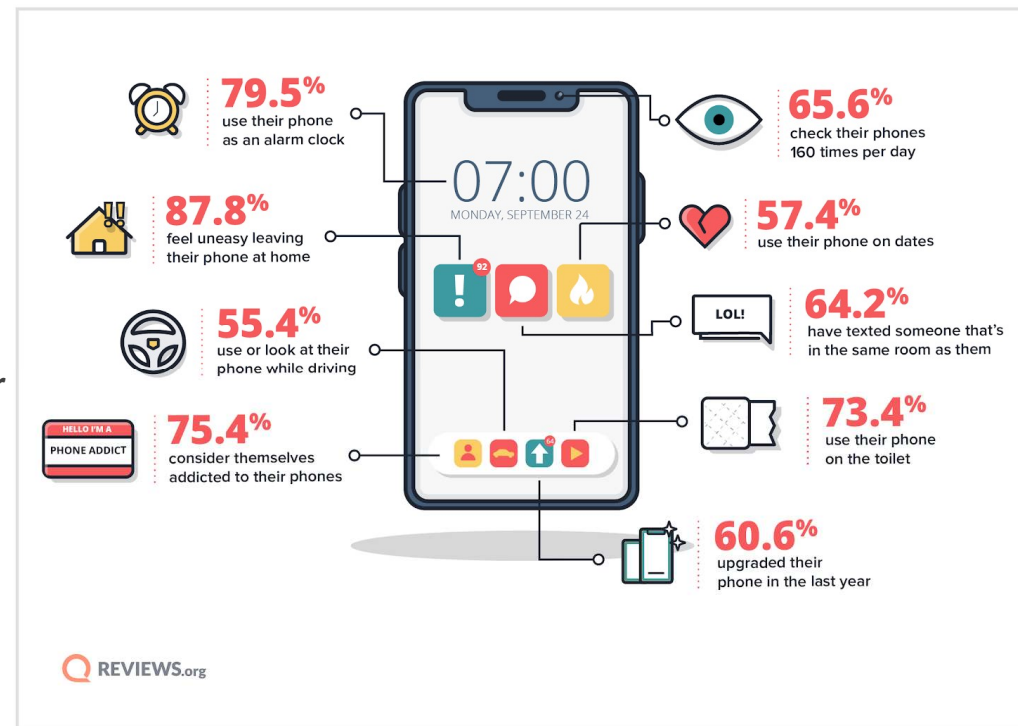
Negative Prediction Error

What even is the problem?
Dopamine & Our Software

- Software design patterns intentionally leverage the dopamine-driven feedback loop to promote addiction to products.

- **Food for Thought:**
  - *Do you believe your addicted to your phone?*
  - *What about your computer?*
  - *Or your video game console?*
  - *If so, are some applications better at getting your attention than others?*
  - *Even if you say no to all of the above, would someone else close to you say different?*
  - *Do you take any intentional actions to try to mitigate your interactions with software?*

79.5% use their phone as an alarm clock

87.8% feel uneasy leaving their phone at home

55.4% use or look at their phone while driving

HELLO I'M A PHONE ADDICT **75.4%** consider themselves addicted to their phones

07:00 MONDAY, SEPTEMBER 24

65.6% check their phones 160 times per day

57.4% use their phone on dates

LOL! **64.2%** have texted someone that's in the same room as them

73.4% use their phone on the toilet

60.6% upgraded their phone in the last year

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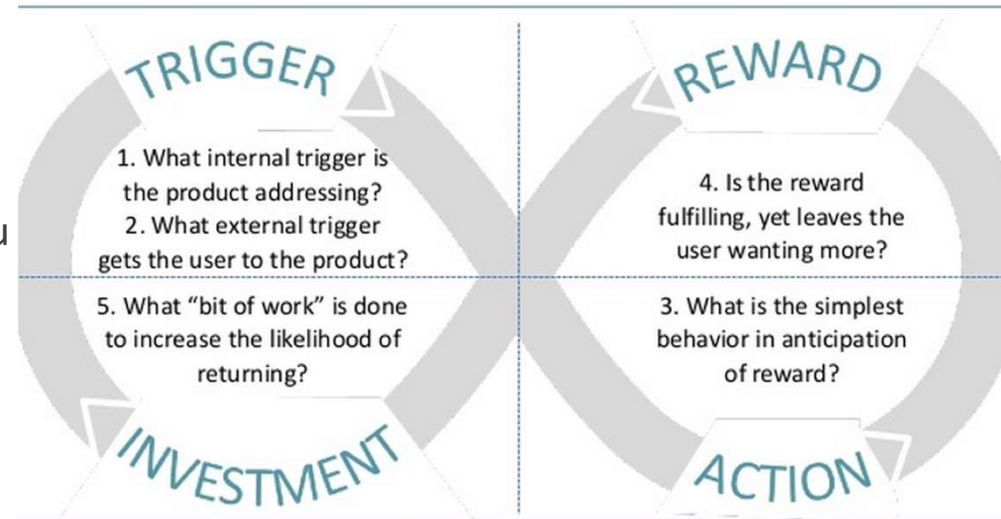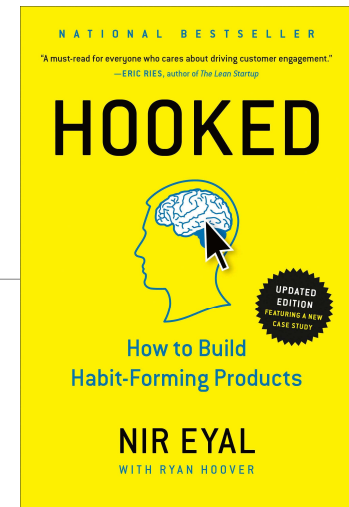# What even is the problem?
The Goal of Dark Designs

- The goal of dark designs is to form habitual behaviors (i.e. addiction) towards using the product.

- This occurs by making a product that is **used frequently** and **seemingly better** than any of the competition.

- When both of these factors are combined, habitual behaviors form.

- **Food for Thought: What products can you think of that live in the habit zone?**
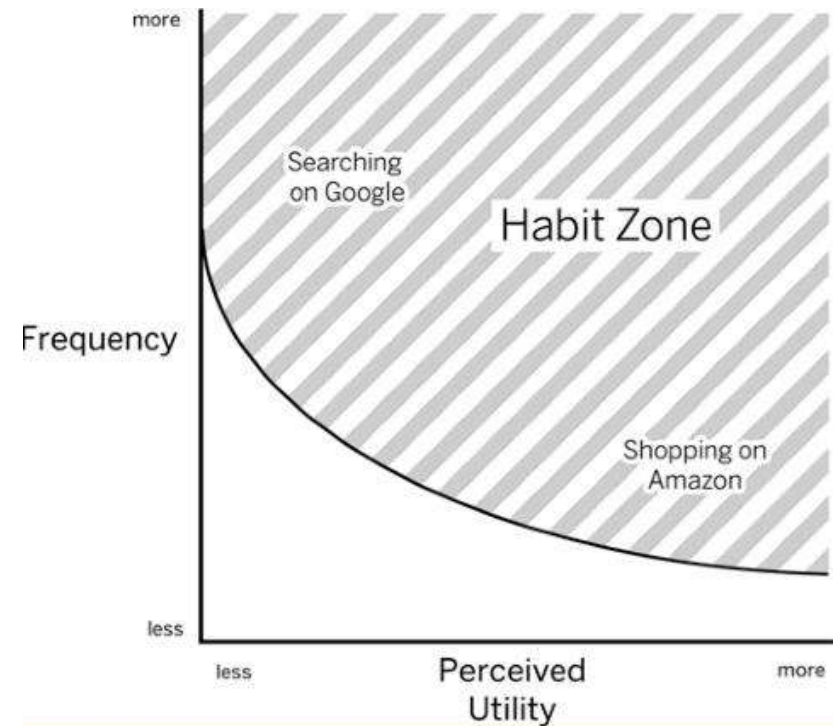
What even is the problem?
## *The 30,000' View of Dark Designs*

1. **Internal Trigger:** What intrinsic need does the product satisfy?

2. **External Trigger:** What does the product do to remind you of this?

3. **Action:** What behaviors does the product allow you to do to fill that need?

4. **Reward:** What response is given? Does it feel good? Okay... But was it good enough? Do you want to feel it again?

5. **Investment:** What does the product do to make you come back?
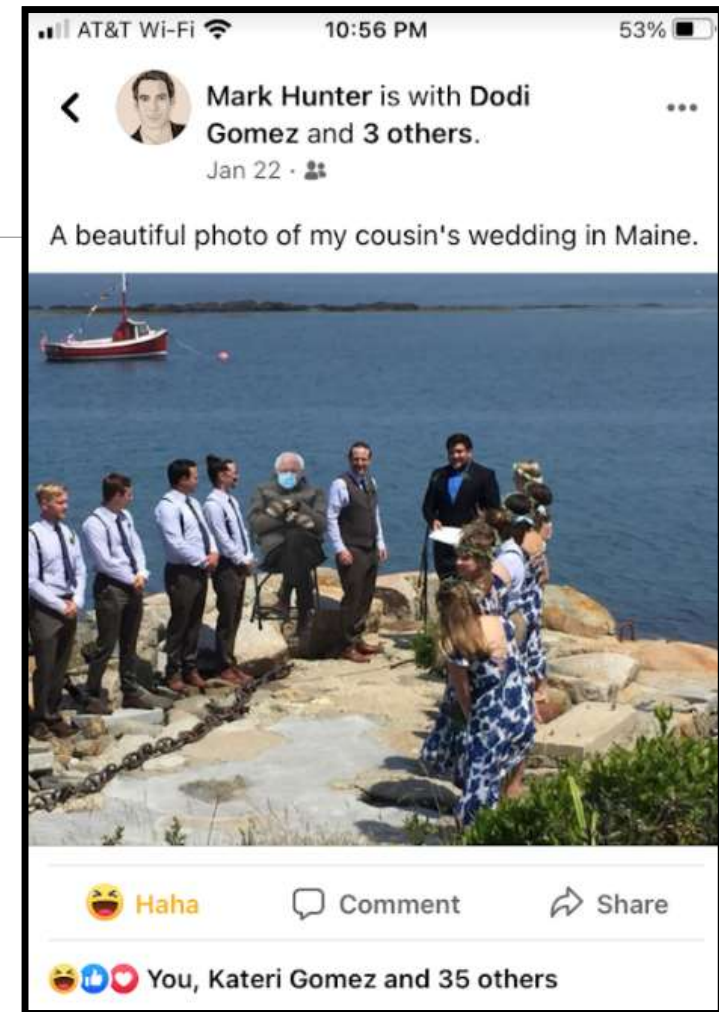
What even is the problem?
Triggers

- This is the actuator of the behavior. There are can be 2 types of triggers.

- Internal triggers are positive or negative emotions like happiness, loneliness, fear of missing out, boredom and so on.

- External triggers are embedded with information which tells the user what to do next, like Email, App Notifications, App Icons.
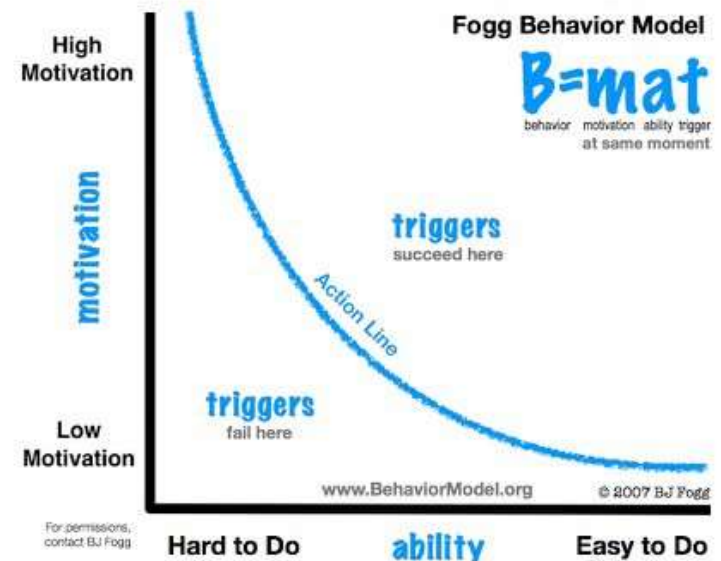
What even is the problem?
Action

- Action is the result of a trigger. To increase the chances of users returning to the product, the product should be easy to use and there should be actions taken in anticipation of a reward.

What even is the problem?
## *Reward & Investment*

- Variable rewards are one of the most powerful tools that companies use to hook users.

- These rewards create a craving and curiosity in users and introducing variability multiplies the effect associated with wanting and desire.

- Research shows that levels of dopamine surge when the brain is expecting a reward.

- If the reward works, then often the user will follow up to achieve (or attempt to achieve) that award again. This is investment.

- Increase the user engagement and the user investment in the product which in-turn increases the chances of user getting back to the product often.

- An investment example could be time, money, inviting friends, stating preferences, building virtual assets, and learning to use new features.

- Through consecutive "hook cycles," the products could reach their ultimate goal of bringing users back again and again without depending on costly advertising and marketing.

What even is the problem?
Even Darker Design Patterns

- "Darker design patterns" are ones that go beyond basic manipulation into the realm of deceit.

- We've seen these in places like:
  - Fine print
  - "Free" trials
  - Screen manipulation
    - Tiny exit 'X' or dysfunctional exits
    - Virtual objects that trick you to think they're real

- **Food for Thought: What outright deceitful tactics have you seen in software promotion?**
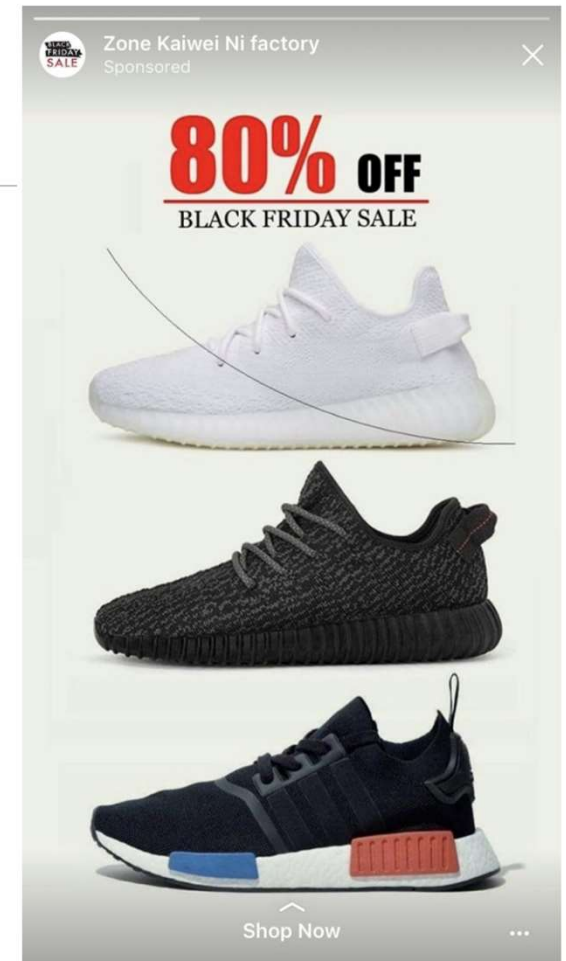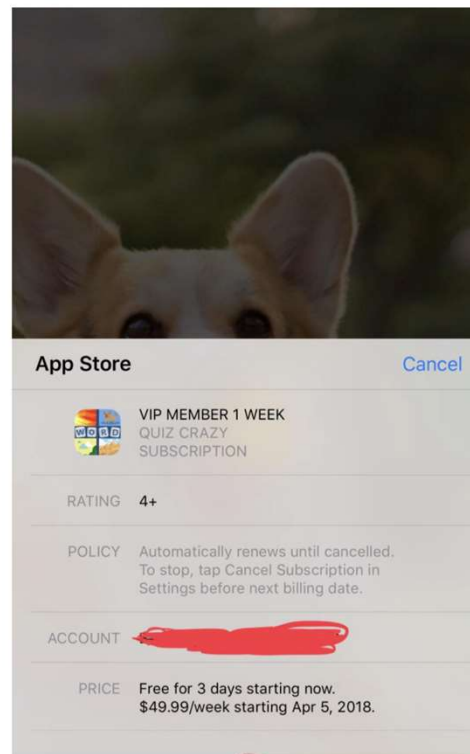
HOLD UP...

New guiding question:

Is this even a problem?

Instagram is not a gram of heroin... Playing Call of Duty is not the same as doing cocaine...

HOLD UP...

## FOOD FOR THOUGHT:

Is this a problem?!?!

Is this a problem?
## Looking at the medical literature...

- **DSM-V**
  - The *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition
  - Published by the American Psychiatric Association (APA)
  - No mention of "general digital addiction" in the DSM-V
  - In 2013, the DSM-V found insufficient evidence to classify "internet gaming disorder" as a mental health disease but placed it as a "concern for future research"
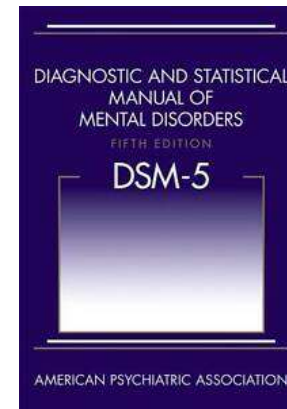
- **ICD-11**
  - The International Classification of Diseases, Eleventh Edition
  - Published by the World Health Organization (WHO)
  - Recognizes "gaming disorder" as a mental health disease
  - Caveat: The drafting of ICD-11 was made in 2019 but won't be published until late 2021 or 2022

Moral of the story: The two chief authorities on mental health are only beginning to recognize "gaming disorder" (with no mention of other forms of digital addiction)
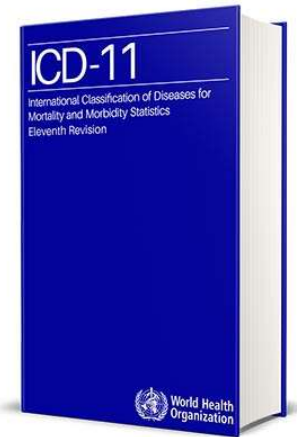
Is this a problem?
How could we even measure it?

- **Subjectively**
  - This is perhaps the *messiest* topic to measure subjectively. (i.e. It's hard to ask an addict [or even a loved one] if they are addicted.)
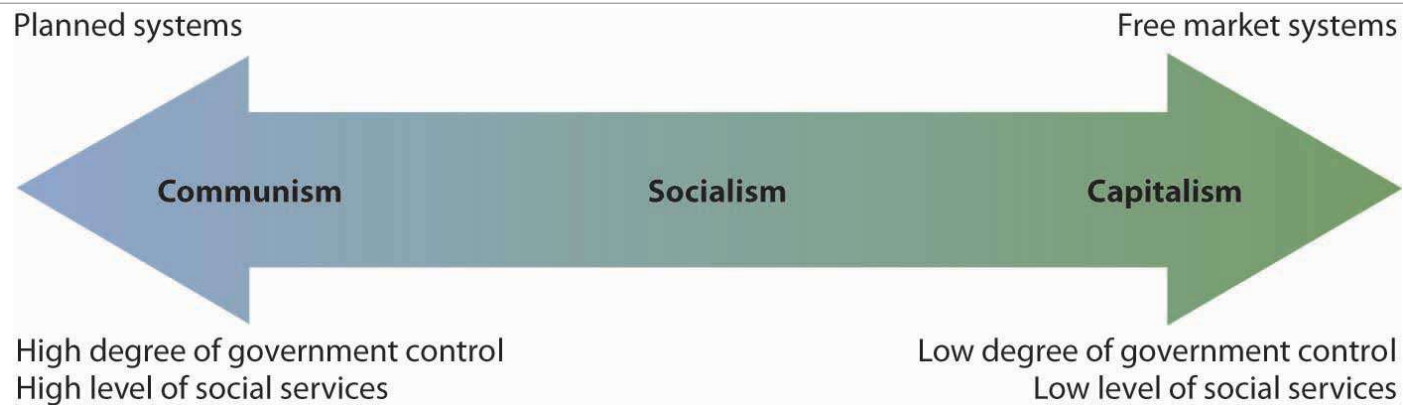
- **Objectively**
  - **Food for Thought: How would you measure addiction objectively? What, as a researcher, might you look for?**

- *But this is too simplistic… Really there are two research questions to answer:*
  - Is digital addiction a problem to the individual?
  - Is digital addiction a problem to society?
    - Those are fundamentally very different questions… **Food for Thought: How might you objectively try to measure against each?**

What should be done?
How do we move forward?

Planned systems — Free market systems

Communism — Socialism — Capitalism

High degree of government control
High level of social services

Low degree of government control
Low level of social services

This is an economic spectrum… on one end is freedom for businesses to do as they please… on the other businesses are told exactly how to act by the government…

FOOD FOR THOUGHT:
If it is known that businesses are exploiting our human nature to make products addictive, to what extent should the government (i.e. the will of the collective people) intervene to regulate that exploitation?