

Tech Curiosity Session 4 of 6

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Delaware Valley University

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Welcome

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[Tech Curiosity Presentation Archive](#)

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Cheap Chromebooks (and my carbon footprint)

- [Acer Spin 2-in-1 11.6"](#) - MediaTek MT8183C (Costco, \$200) – returned, why?
- [Asus Chromebook C423NA, 14"](#), Intel Processor N3350, 4GB DDR4, 64GB eMMC (Amazon, \$189 – now \$160) – returned, why?
- [Lenovo Chromebook 3 14" Laptop - Mediatek MT8183 - 4GB Memory - 64GB](#) (Best Buy, \$169) – this one's a keeper, why?
- Or should I have waited? Why? (video)



Update from last week

- As of 2020, semiconductors already account for 40% of the cost of a new car

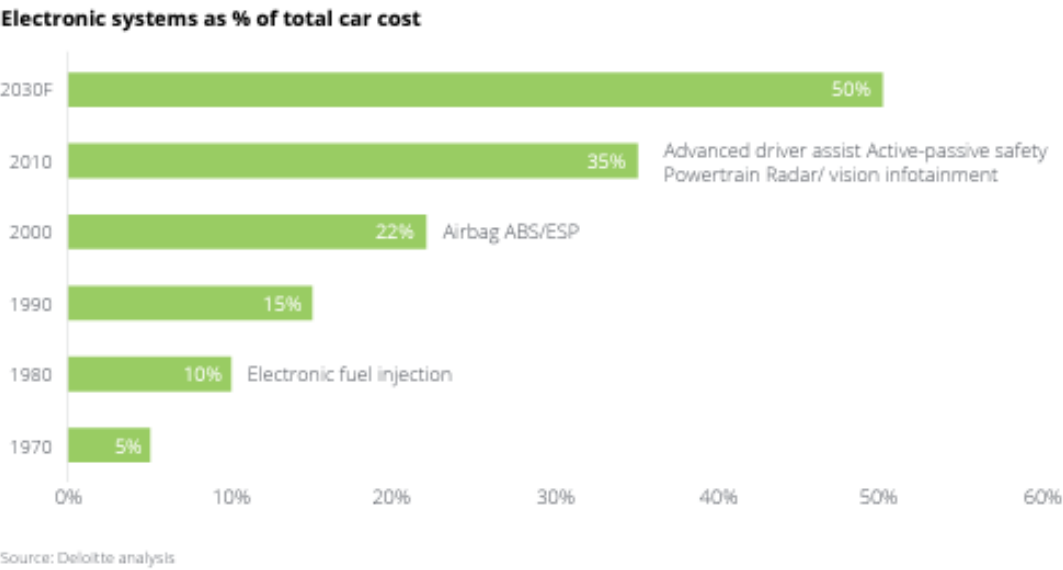


Figure: Factory-installed electronics



Thank you Roy!

Crypto and Venmo – a deal for you!

venmo

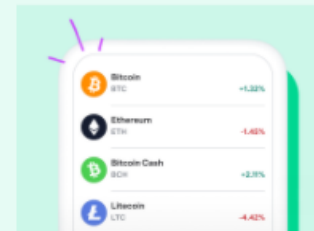
Earn \$25 for buying crypto on Venmo



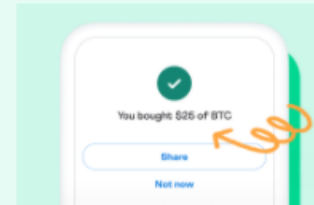
We want to help jumpstart your crypto journey. Purchase \$25 in crypto by September 30th, 2021*, and we'll drop \$25 into your Venmo account by October 15th, 2021.**

Get started

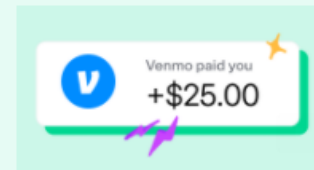
Here's how it works



1 Tap the crypto symbol at the bottom of the home screen to pick a cryptocurrency.



2 Buy \$25 or more in a single purchase by September 30th, 2021.**



3 We'll drop \$25 into your account by October 15th, 2021.

And in the small print:

Crypto is volatile, so it can rise and fall in value quickly. Like all currencies, there's potential for gains and losses — so be sure to take it at a pace you're comfortable with.

Technology in the News

- **Ford plans to build three new battery factories and one electric truck plant in the United States, demonstrating its commitment to electric vehicle production.** The project is expected to create 11,000 new jobs over the next four years.
 - Ford said the investment would allow it to produce more than a million electric vehicles per year by the second half of the 2020s.
 - The project is estimated to cost Ford (and a South Korean supplier) \$11.4B.
 - Two of the battery plants are set to be built in Kentucky, with the third in Tennessee.

Technology in the News

- **Instagram** has announced it **will be pausing its plans for a kids app**. The news comes after the Wall Street Journal published Facebook's internal documents detailing that **32% of teenage girls** felt that Instagram made them have a worse body image.
 - Mosseri said the app was "never meant for younger kids, but for **tweens (aged 10-12)**" and that it **would require parental permission** for children to join.
 - In May, 44 state attorneys general wrote a letter asking Facebook to scrap its plan for an under-13 app.

Technology in the News

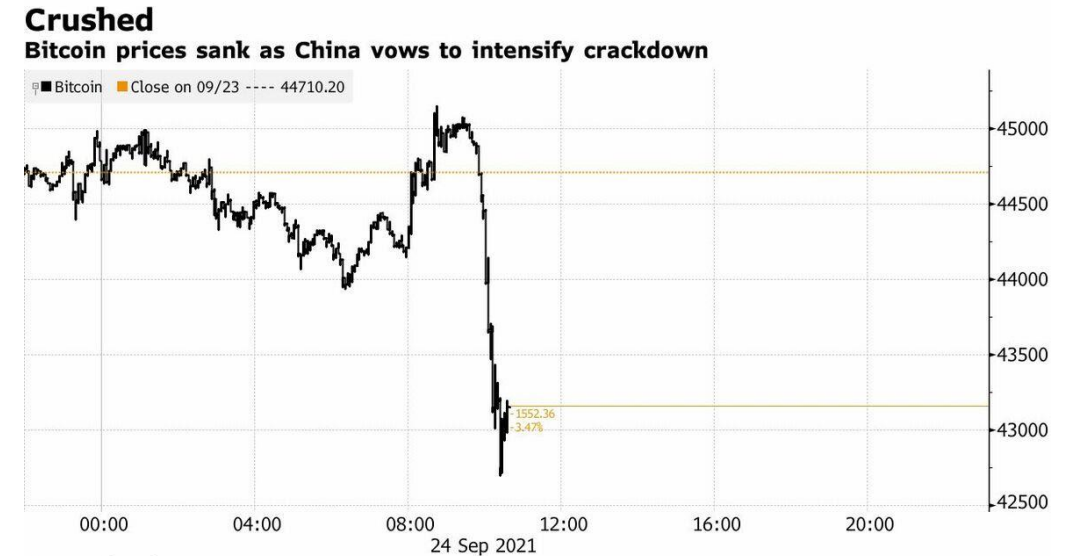
- **UC San Diego researchers backed by LG Energy have developed a silicon all-solid-state battery that could make charging faster.** The battery could potentially have a longer lifespan.
 - A lab-scale test demonstrated the battery was able to meet 500 charging cycles with 80% capacity retention at room temperature.
 - The silicon solid-state battery would be able to charge faster and at lower temperatures.

Technology in the News

- **Samsung released research proposing a way to develop memory chips inspired by the brain's connections.** The researchers say the new method may facilitate AI learning and adaptation.
 - The neuronal map could be copied by programming the memory conductance in solid-state drives or resistive random access memories.
 - A nanoelectrode array would enter a large number of neurons and record electrical signals that would specify the locations of connections and their strength.
 - The brain has approximately 100 billion neurons and the ultimate neuromorphic chip would need 100 trillion memories, which would be made possible by the 3D integration of memories.

Technology in the News

- The prices of bitcoin and ethereum each fell by more than 5% after the People's Bank of China (PBOC) stated publicly that all cryptocurrency-related activities are illegal in the country. The PBOC said that all services offering crypto trading, order matching, or derivatives are prohibited.
- The announcement said that overseas crypto exchanges can no longer legally provide their services in China.
- The Chinese government cracked down on cryptocurrency miners earlier this year, leading to a short-term reduction in the global processing power of bitcoin.



Technology in the News (OK, not tech but interesting!)

- A geological study in New Mexico found the [earliest-ever human footprints in North America](#). The footprints were made ~21,000-23,000 years ago, during the "Last Glacial Maximum."

- The "[Last Glacial Maximum](#)" was a pre-historical period in which ice sheets covered much of North America. As these ice sheets melted, early humans and other animals were able to traverse new geographic areas.
- The footprints suggest that humans arrived in the Americas up to 30,000 years ago.
- The evidence was published in *Nature*.
 - "It's the earliest unequivocal evidence for humans in the Americas." - Professor Matthew Bennett



Technology in the News

- **Northwestern University researchers have developed a microchip the size of a sand grain, inspired by wind-dispersed seeds.** The chips are intended for applications such as tracking air pollution or diseases.
 - The researchers tested the microchip to carry antennas that could enable connectivity with smart devices.
 - Potential applications include water quality and solar radiation monitoring.



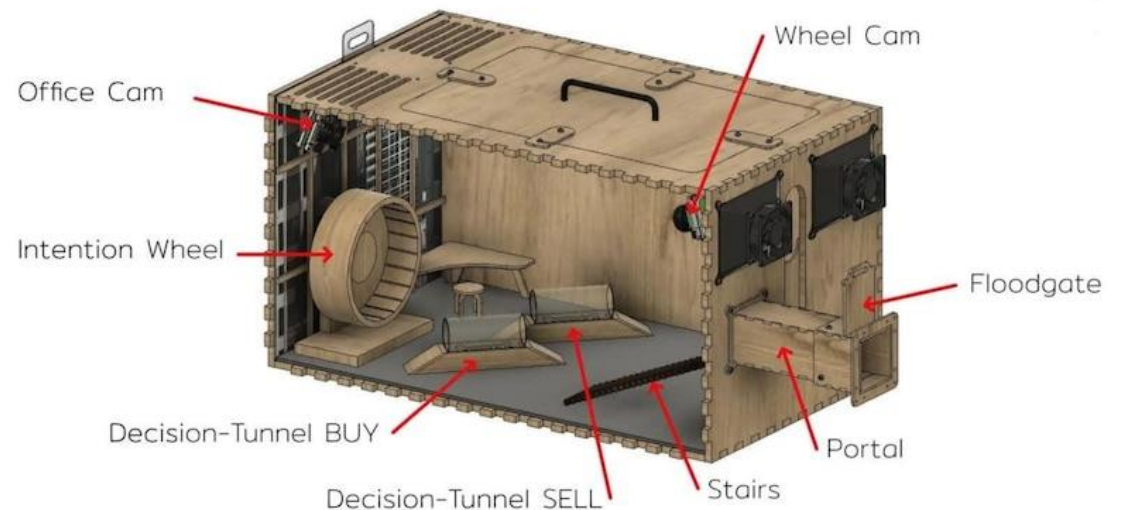
Crypto-Trading Hamster (Mr. Goxx)

Spinning on the hamster wheel allows Mr. Goxx to select a cryptocurrency to trade. Choosing one of two tunnels to run through allows him to buy or sell.

When Mr. Goxx runs on the [hamster wheel](#), he can select among dozens of cryptocurrencies. Then, deciding between two tunnels, he chooses whether to buy or sell. According to the [Twitch](#) account for the hamster, his decision is sent over to a real trading platform — **and yes, real money is involved.**

Thank you Sara, I think!

Goxx Box: The trading office

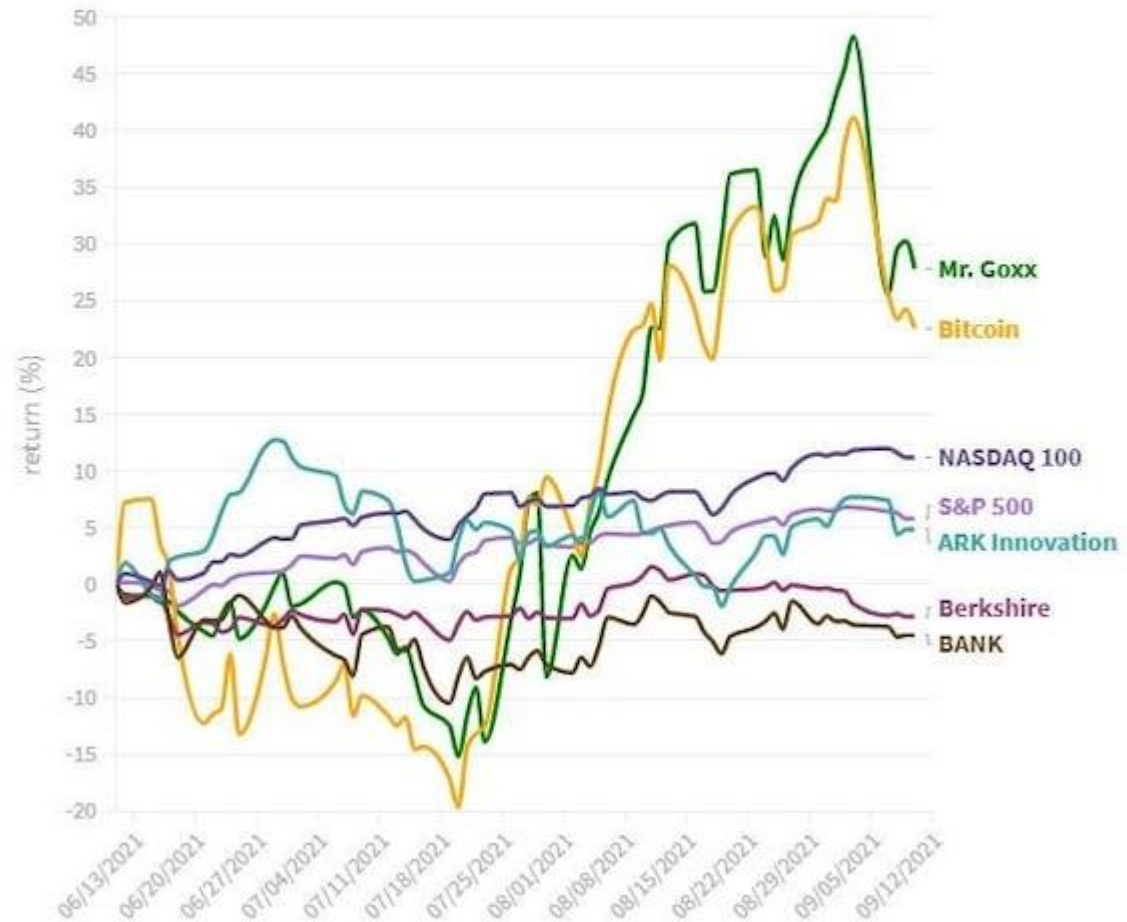


Crypto-Trading Hamster (Mr. Goxx)

How well is Mr. Goxx doing?

Glad you asked!

Mr. Goxx vs. the market
full history



Thank you Sara!

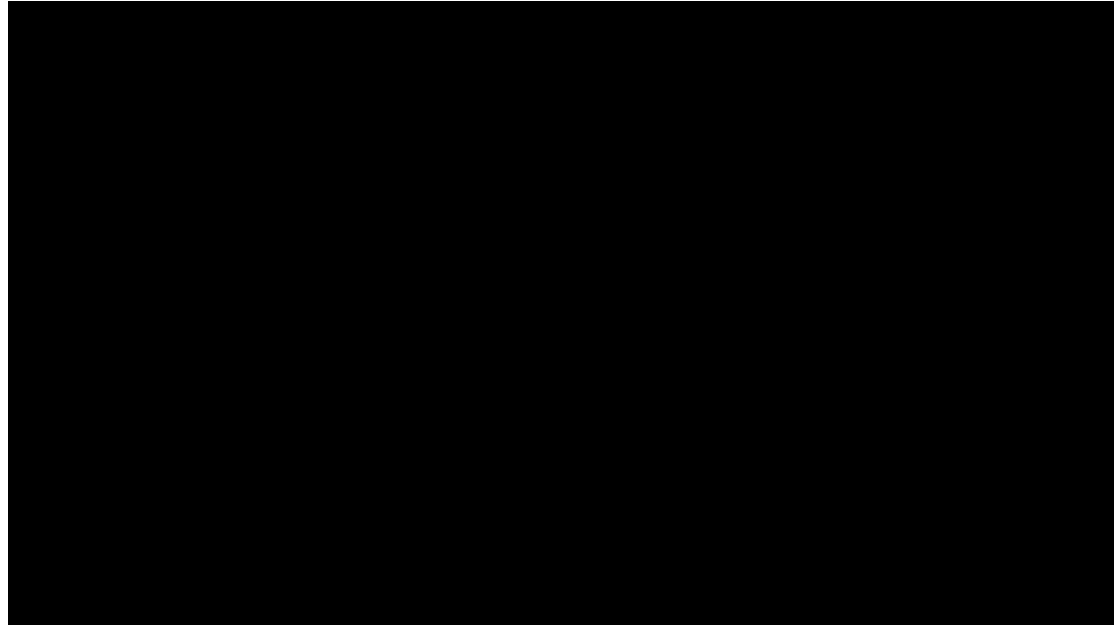
Game Over – Tesla wins!

[The Tesla Model 2, the End of All Other EV's](#)

You'll get to pre-order yours next year!

This just in:

[GAME OVER. Toyota Can't Catch Up to Tesla](#)



<https://www.youtube.com/watch?v=TX1XY6eOyKk>

Dream incubation advertising

Source: *Science* Vol 372, issue 6549, 25 June 2021, p 1380

- Dream incubation advertising, engineered by audio or video clips into dreams.
- **People are susceptible to suggestions when asleep**, says MIT cognitive scientist Adam Haar, 1 of 40 sleep/dream researchers who calls for regulation of commercial dream manipulation.
- Concern for future is that companies will use the smart speakers in devices to detect sleep stages and then play back sounds to influence dreams and behaviors, with or without permission.
- Xbox and Coors are already investigating this... Yikes!

Thank you Phoebe!

Predicting behavior (aka [Predictive Policing](#))

- Predictive policing is the application of analytical techniques—particularly quantitative techniques—to identify likely targets for police intervention and to prevent crime or solve past crimes by making statistical predictions.
- [Should Police Be Able to Predict Crime?](#) Professor Releases Roadmap for AI and Policing Ethics Research
- [Ethics, Artificial Intelligence and Predictive Policing](#)
- [Predictive policing algorithms are racist](#)

Predictive Policing

- What's the goal?
 - to predict, prevent, solve crime
- Question: is it discriminatory?
 - 'Intentional discrimination' takes place when a person purposefully treats someone differently
 - "disparate impact" discrimination takes place when a policy is formally blind to a person's protected characteristics
- Questions for developers:
 - How should developers balance accuracy and fairness when designing their systems?
 - What data should(n't) we collect?
 - How can we eliminate bias in the choice of data or the construction and outputs of algorithms?

Proton Therapy

What is it?

References:

[Proton Therapy and Cost](#)

[Is Proton Therapy Safer than Traditional Radiation?](#)



https://www.youtube.com/watch?v=orEcGR_9Rg0

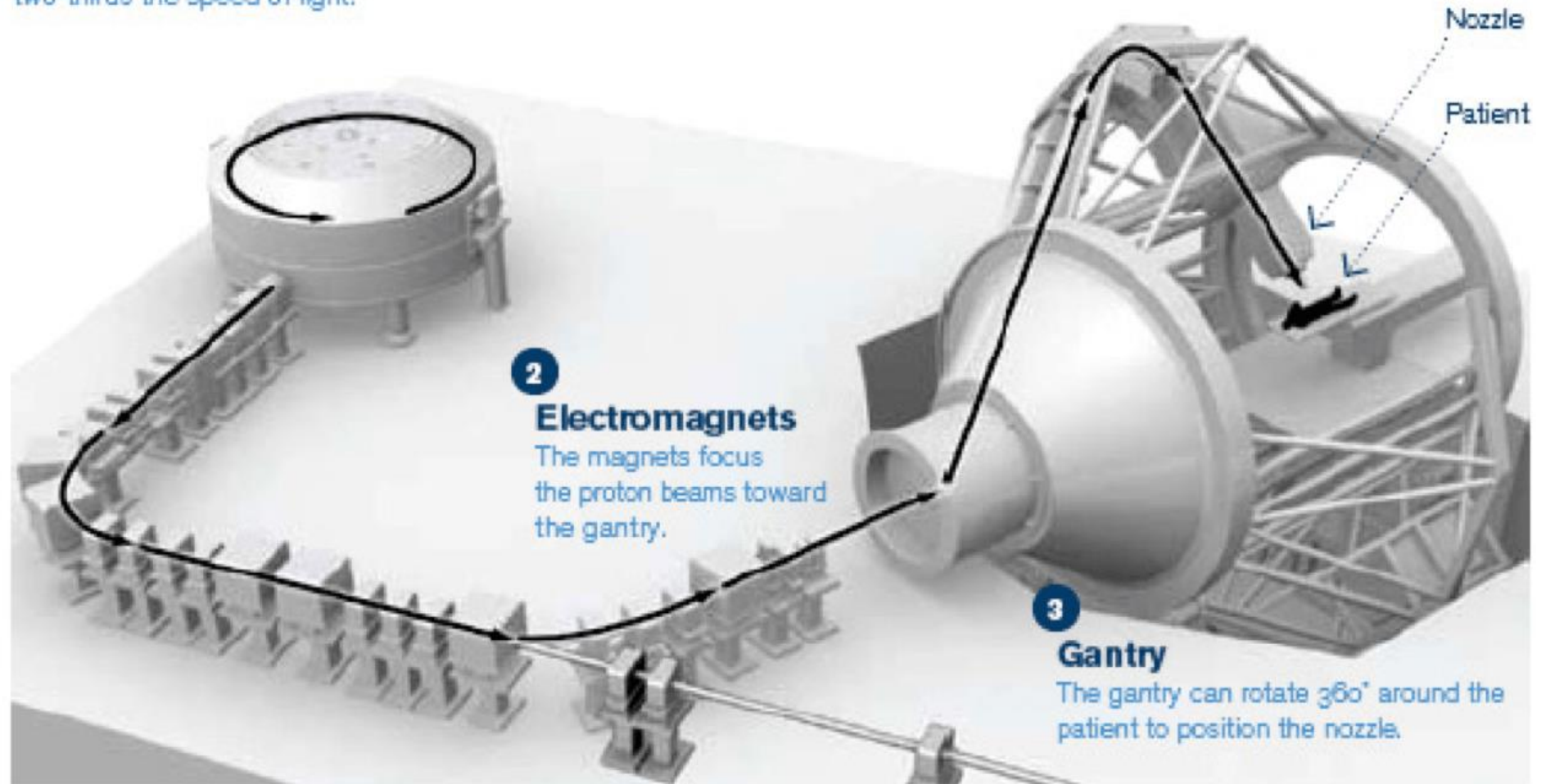
Proton Therapy

- 1 Cyclotron**
Using magnetic fields, the cyclotron can accelerate the hydrogen protons to two-thirds the speed of light.

- 2 Electromagnets**
The magnets focus the proton beams toward the gantry.

- 4 Nozzle**
A 21,000-pound magnet guides the beam to the patient through a nozzle.

- 3 Gantry**
The gantry can rotate 360° around the patient to position the nozzle.



Proton Therapy



And what it looks
like in real life...
And what ~\$200mil
will buy.



Why do I care?

- My brother has low-grade non-Hodgkin [Follicular lymphoma](#) (NHL)
 - PBT (or PT) is one the available therapies for this form of lymphoma
- [Proton therapy in the management of non-Hodgkin lymphoma](#) (2015)
 - Summary: PT is a feasible and effective treatment for NHL. **Early outcomes are favorable**. Longer follow-up and more patients are needed to demonstrate adequate local control and lower rates of late toxicities.
 - From a 2020 report: After 3 years, 46% of patients in the proton therapy group and 49% of those in the traditional radiation therapy group were cancer free. 56% of people who received proton therapy and 58% of those who received traditional radiation were still alive after 3 years...

Our brains on technology

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7366948/#:~:text=Potential%20harmful%20effects%20of%20extensive,brain%20development%2C%20and%20disrupted%20sleep.>
- <https://wexnermedical.osu.edu/blog/how-internet-affects-your-brain>
- <https://www.scientificamerican.com/article/are-digital-devices-altering-our-brains/>

Our brains on technology

- Some say our gadgets and computers can help improve intelligence. Others say they make us stupid and violent. Which is it?
 - **Research shows that by constantly distracting us, the Internet affects cognitive performance but does not radically alter our brains.**
 - **The findings also suggest that although video games and brain training influence aggression and cognitive performance, respectively, the extent of that influence is much less than many would think.**
 - **The risks of digital devices might be minimized by educating people in ways to enhance concentration, self-control and critical-thinking skills.**

Our brains on technology

- Discussion:
 - Are we becoming 'stupid'?
 - Have we become (better) multitaskers?
 - What about our 'attention span'?
 - Do video games increase aggression?
 - Is gaming better for our brains?

Fact: young people must be taught to develop their concentration, self-control and critical-thinking skills!

Our brains on technology

- More on this topic can be found in this series of book reviews I taught in 2017:
 - [Born Digital](#) by Urs Gasser & John Palfrey
 - [Alone Together](#) by Sherry Turkle
 - [Reclaiming Conversation](#) by Sherry Turkle
 - [The Shallows](#) by Nicholas Carr
 - [The Glass Cage](#) by Nicholas Carr
 - [What Technology Wants](#) by Kevin Kelly
 - [The Inevitable](#) by Kevin Kelly
 - [Irresistible](#) by Adam Alter

What's on your mind for next week?

Extra Credit

Some slides from my [2017 class](#)

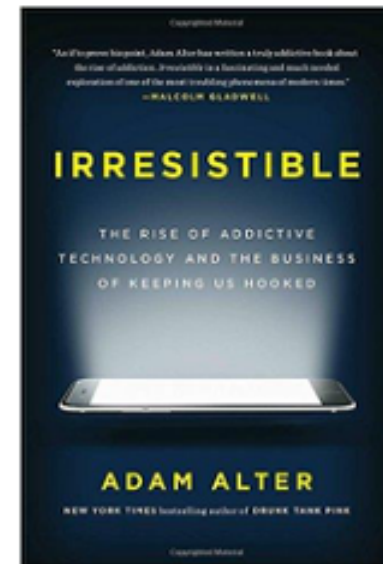
Tech Talks: Tech for Seniors

Addiction by Adam Alter

Center for Learning in Retirement - Fall 2017

Glen Maxson

seniortechadvisor.com



Irresistible: The Rise of Addictive Technology and the Business of Keeping Us Hooked

Review of a book by Adam Alter

Introduction

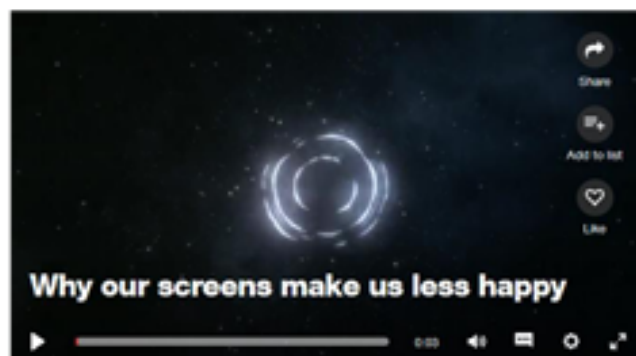
Adam Alter is an Associate Professor of Marketing at New York University's Stern School of Business, with an affiliated appointment in the New York University Psychology Department.



Adam is the *New York Times* bestselling author of two books: *Irresistible* (March, 2017), which considers why so many people today are addicted to so many behaviors, from incessant smart phone and internet use to video game playing and online shopping.



[2017 TED Talk](#)



What are our screens and devices doing to us? Psychologist Adam Alter studies how much time screens steal from us and how they're getting away with it. He shares why all those hours you spend staring at your smartphone, tablet or computer might be making you miserable -- and what you can do about it.

NPR Interview (Mar. 13, 2017)

'Irresistible' By Design: It's No Accident You Can't Stop Looking At The Screen (30:20)

Adam's definition of "addiction"?

It is something you enjoy doing in the short term, that undermines your well-being in the long term — but that you do compulsively anyway.

[Play Intro](#)

The Addicted Brain (Sept. 17 National Geography)

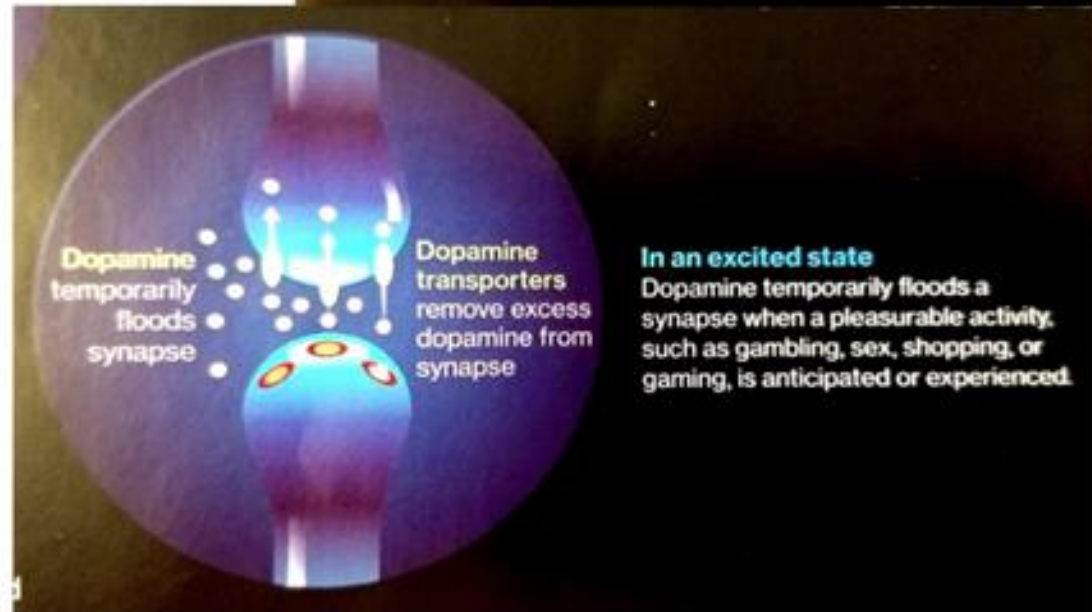
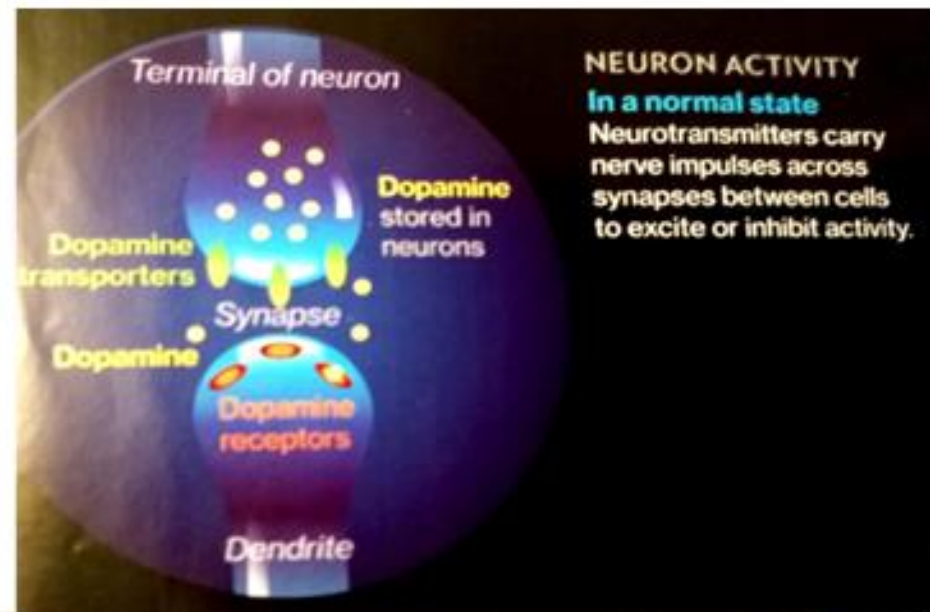
p. 41 – In the Grip of Gaming

In Seoul, e-stadiums and game parlors charge about a dollar an hour, and some venues are open around the clock. Soon after South Korea made super-high-speed Internet cheap and widely available, it became clear that some people were ruining their lives through obsessive game playing. The government now pays for treatment. The American Psychiatric Association hasn't recognized compulsive gaming as an addiction, but it lists Internet game disorder as 'requiring more study'.

Hijacking the Brain (continued)

A NATURAL HIGH

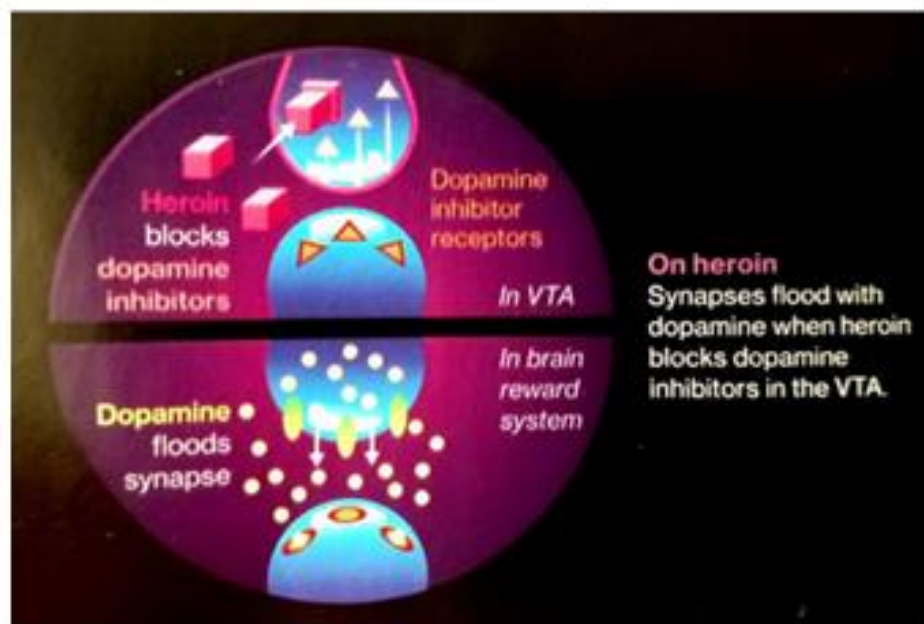
Our brains evolved a dopamine-based reward system to encourage behaviors that help us survive, such as eating, procreating, and interacting socially.



Hijacking the Brain (continued)

A CHEMICAL RUSH

Different drugs interact with the reward system in unique ways to keep synapses artificially flooded with dopamine. That dopamine rush can rewire your brain to want more drugs, leading to addiction.



Common 'behavioral addictions':

- Exercise
- Video games
- Gambling
- Work
- E-mail (p 109)
- Social media
- Binge watching
- Hoarding
- ...

What do these have in common?

- Behavioral addiction is rooted in environment + circumstance
- Might fulfill a psychological need, obsession, compulsion
- May be detrimental to work, health, hygiene, social interaction...
- Often becomes something we 'want' versus something we 'like'

What makes tech so 'irresistible'?

By design,

- Goal setting, perfectionism – time and numbers (e.g. FitBit)
- Classic reinforcement – provide small doses of positive feedback (work)
- Uncertainty - Facebook, Instagram... (social media)
- 'Loss as motivation' – the gambler's paradox (slots)
- Mobile access – iPad and iPhone enabled (mobile devices)
- Ludic loops – complete one challenging element, then the next... (video games)
- 'Flow' - proximal (skill) development – skill vs. challenge (video games)
- Zeigarnik effect – incomplete experiences (e.g. cliff-hangers) (TV shows)
- MUDs & MMOs - immersion, achievement, social (connection) (video games)
- Absence of Stopping rules (all)

Bottomline: Every technique in the book is used to get and keep us hooked!

GDPR vs privacy US laws

- <https://www.ispartnersllc.com/blog/us-nationwide-data-privacy-law-gdpr/>
- <https://edaa.eu/a-legislative-comparison-us-vs-eu-on-data-privacy/>
- <https://www.forbes.com/sites/forbestechcouncil/2020/07/29/the-privacy-mindset-of-the-eu-vs-the-us/?sh=57bff0597d01>

The Privacy Mindset Of The EU Vs. The US

- The norm in the U.S. that online behavior gets tracked and used for a slew of subsequent manipulation. U.S. legislation isn't even close to providing adequate protection of consumer privacy interests.
- Americans choose to believe that their online behavior being tracked happens in their best interests or is a price to pay for getting free or discounted products.
- GDPR was adopted on April 14, 2016, and before it became enforceable on May 25, 2018, the U.S. Congress enacted the Clarifying Lawful Overseas Use of Data (CLOUD) Act on March 23, 2018. Rather than being compatible with the GDPR, the U.S. CLOUD Act overrules it.

The Privacy Mindset Of The EU Vs. The US

- Federal law requires U.S.-based software companies and IT service providers to ensure that authorities can have access to all stored data, including data stored on foreign servers. Furthermore, it guards U.S. service providers from having to tell customers whether authorities have requested their data.
- One lobbying group that represents internet companies is striving for a [federal privacy law](#) that would preempt more state regulations like the [California Consumer Privacy Act](#) (CCPA), which actually makes real progress. Its ideal federal privacy law would undermine the CCPA to essentially let companies return to business as normal and also make it impossible for other states to set the bar even higher.

What is GDPR, the EU's new data protection law?

- In May 2018, the EU implemented the **General Data Protection Regulation (GDPR)** which became the new legal backbone on data protection and privacy in the EU.
 - It imposes obligations onto organizations anywhere, so long as they target or collect data related to people in the EU.
 - **The GDPR applies to you even if you're not in the EU**
 - **Fines for violating the GDPR are very high**

What is GDPR, the EU's new data protection law?

- If you process data, you have to do so according to seven protection and accountability principles outlined in [Article 5.1-2](#):
 1. **Lawfulness, fairness and transparency** — Processing must be lawful, fair, and transparent to the data subject.
 2. **Purpose limitation** — You must process data for the legitimate purposes specified explicitly to the data subject when you collected it.
 3. **Data minimization** — You should collect and process only as much data as absolutely necessary for the purposes specified.
 4. **Accuracy** — You must keep personal data accurate and up to date.
 5. **Storage limitation** — You may only store personally identifying data for as long as necessary for the specified purpose.
 6. **Integrity and confidentiality** — Processing must be done in such a way as to ensure appropriate security, integrity, and confidentiality (e.g. by using encryption).
 7. **Accountability** — The data controller is responsible for being able to demonstrate GDPR compliance with all of these principles.

What is GDPR, the EU's new data protection law?

- GDPR recognizes a litany of new privacy rights for data subjects, which aim to give individuals more control over the data they loan to organizations. **Data subjects' privacy rights:**
 - 1.The right to be informed
 - 2.The right of access
 - 3.The right to rectification
 - 4.The right to erasure
 - 5.The right to restrict processing
 - 6.The right to data portability
 - 7.The right to object
 - 8.Rights in relation to automated decision making and profiling.