6.1040: Software Design

Problems that *Matter*: Value Sensitive Design

Mitchell Gordon & Daniel Jackson

Slides by Arvind Satyanarayan

team assignments released

meet with your team to discuss project ideas

final project is out

single doc with a series of deadlines spanning rest of semester
first deadline is this friday!

course feedback session is tomorrow

more info on piazza

Poster by Alvy Brooks (@alvybrooks)

Photo from Sam Altman (@sama)

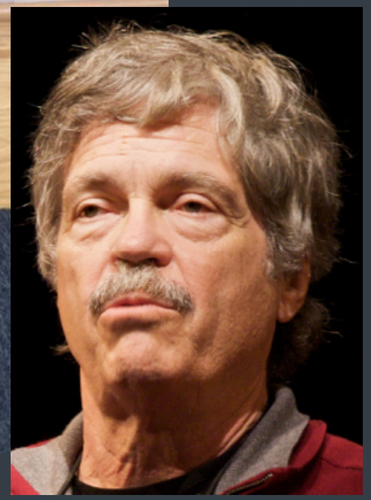

Photo by Marcin Wichary

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https://www.youtube.com/watch?v=gJU99RyjDTs

Need finding / empathy building

is not enough

Value Sensitive Design

Designers often focus on the **immediate context of use**: how will a product be used by the person who purchases it?

Designers rarely have the time to **consider the long-term and indirect effects of their technologies**.

INSIDER

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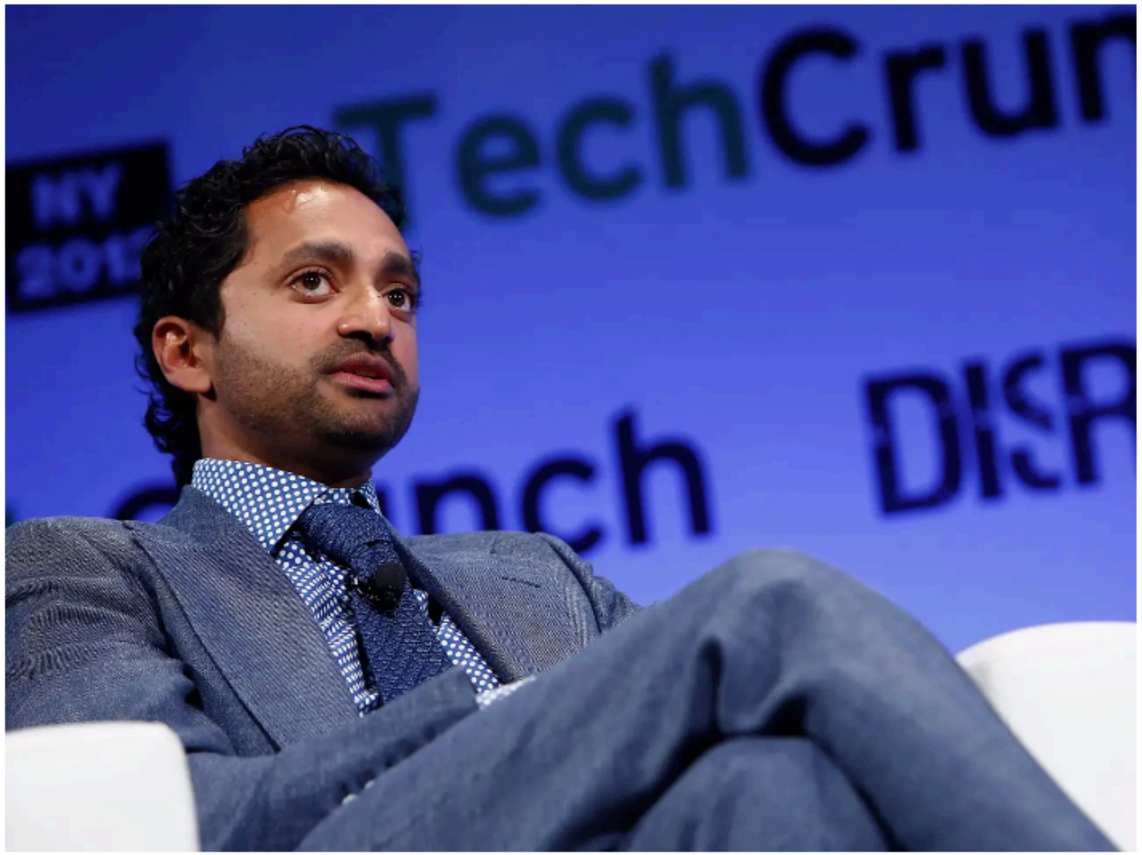
Former Facebook exec feels 'tremendous guilt' for what he helped make

Steve Kovach Dec 11, 2017, 11:09 AM EST



The New York Times

Silicon Valley Says Step Away From the Device

Share full article

Tech firms are uneasy over the effect time online has on relationships. Annie Tritt for The New York Times

By Matt Richtel

July 23, 2012

OUR BEST OFFER WON'T LAST:
$1 a week for your first year.

Value Sensitive Design: 4 Criteria

Stakeholders

Describes the range of effects both on the people who are in direct contact with the technology, as well as those who might not be direct users, but whose lives are nevertheless affected by various interactions around the technology.

Value Sensitive Design: 4 Criteria

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Time

Consider the implications that will only emerge after the technology has moved through initial phases of novelty to later phases of appropriation and integration into society.

Value Sensitive Design: 4 Criteria

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Pervasiveness

Systemic interactions that follow from the widespread adoption of an interactive technology.

Value Sensitive Design: 4 Criteria

Stakeholders — Describes the range of effects both on the people who are in direct contact with the technology, as well as those who might not be direct users, but whose lives are nevertheless affected by various interactions around the technology.

Time — Consider the implications that will only emerge after the technology has moved through initial phases of novelty to later phases of appropriation and integration into society.

Pervasiveness — Systemic interactions that follow from the widespread adoption of an interactive technology.

Values — What do people consider important in life? E.g., autonomy, community, cooperation, democratization, environmental sustainability, fairness, dignity.

Value Sensitive Design: 4 Criteria

Stakeholders

Direct Stakeholders · Indirect Stakeholders · Non-targeted Use

Children · Variation in Abilities · Changing Hands · One Person, Many Roles

Time

The Long Now · Long-Term Health & Well-Being · Sustained Friendships

Work of the Future · Adaptation · Non-Use · Obsolescence · Reappropriation

Pervasiveness

Widespread Use · Diverse Geographies · Crossing National Boundaries

Accounting for Culture · Political Realities

Values

Elicit Stakeholder Values · Consider Key Values at Stake · Choose Desired Values

Evaluate User Experience of Values · Value Tensions · Perceptions of a Value

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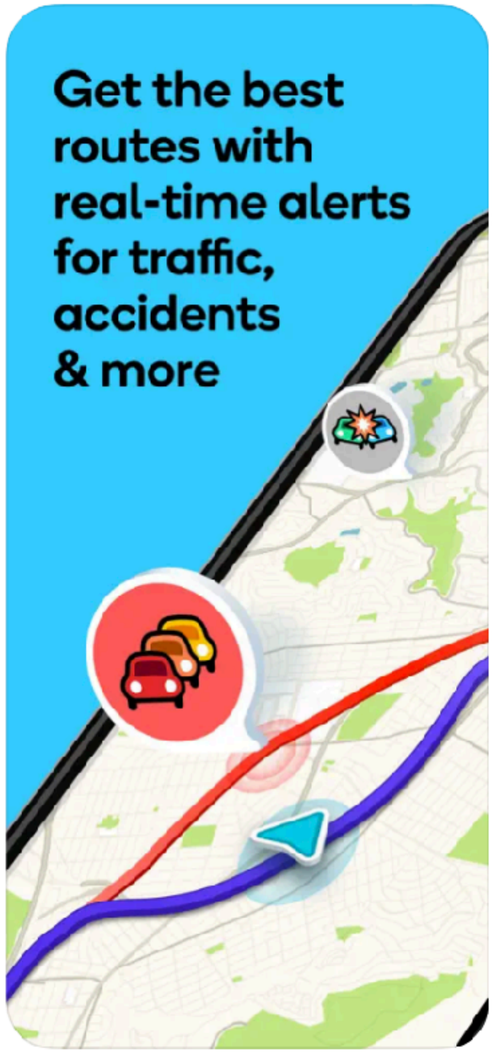
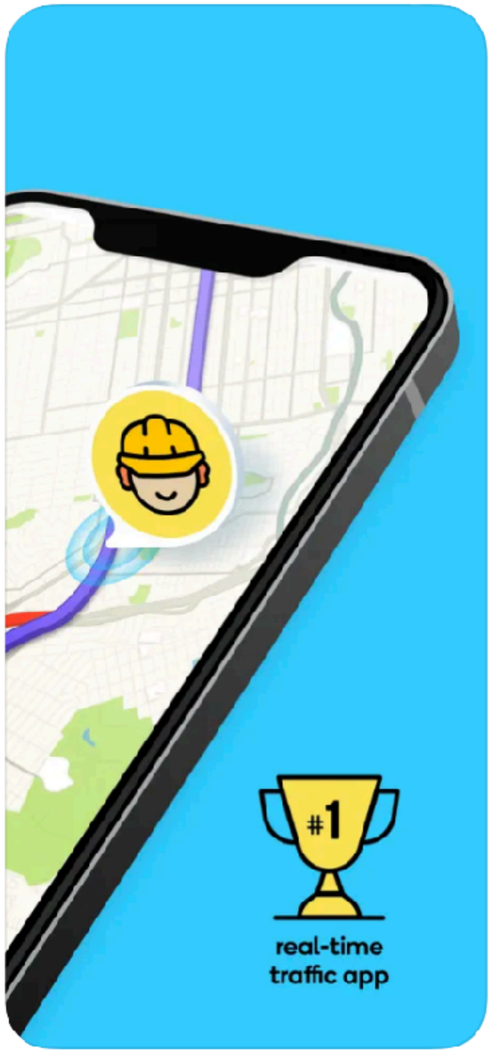
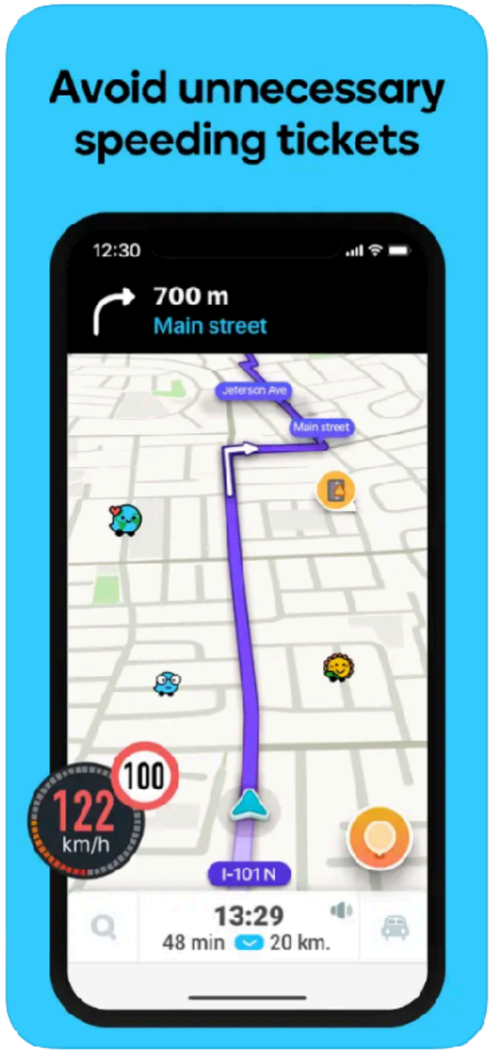
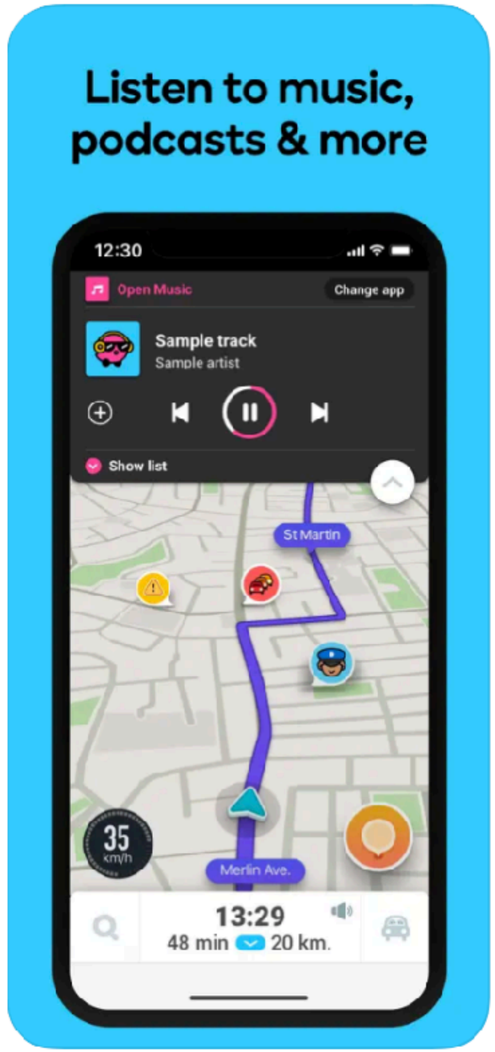
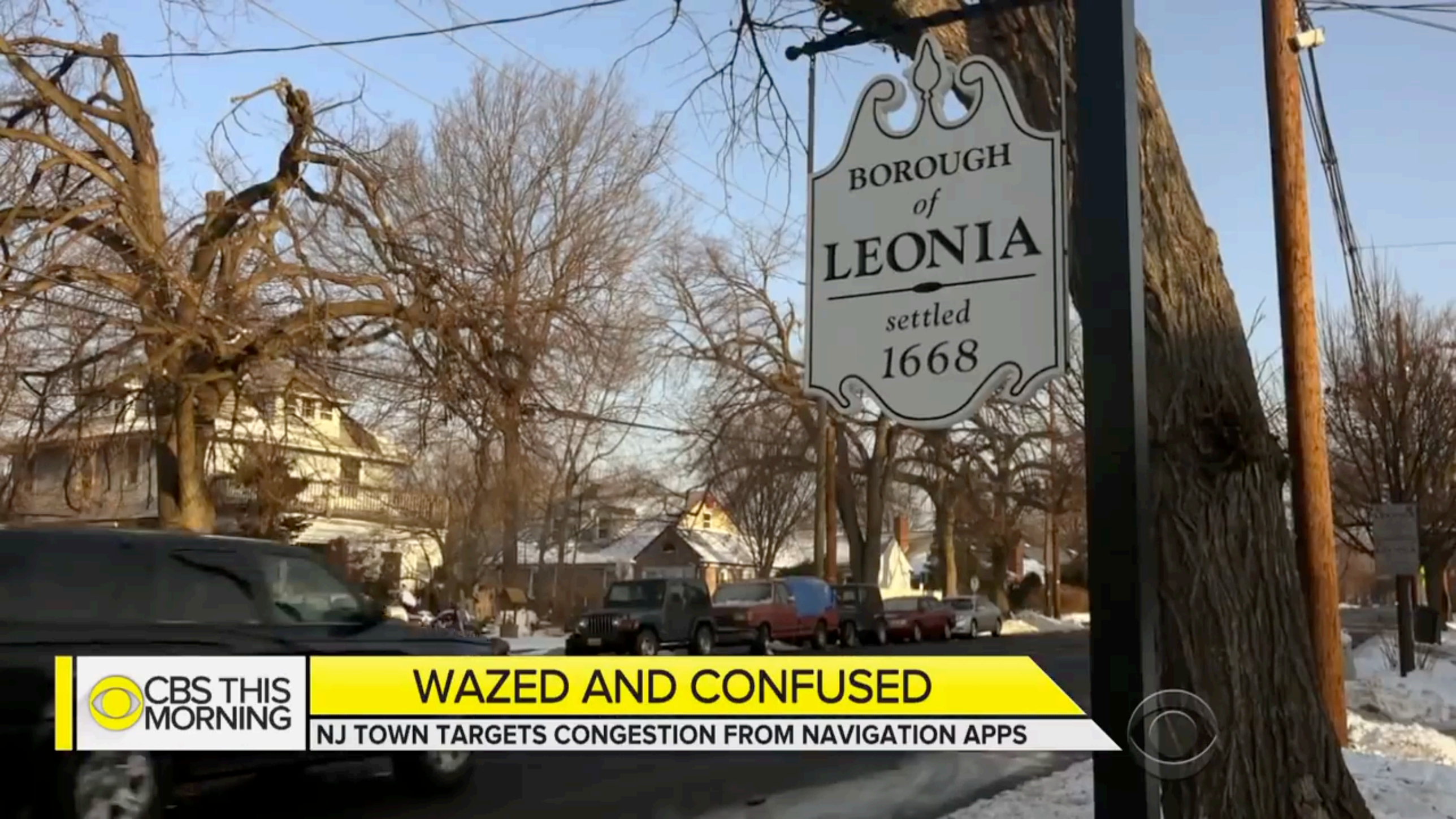
Indirect Stakeholders: The Waze Effect











CBS THIS MORNING

WAZED AND CONFUSED

NJ TOWN TARGETS CONGESTION FROM NAVIGATION APPS

Indirect Stakeholders: The Waze Effect

WBZ-TV

Gail Barry of Medford says navigation apps have completely changed her neighborhood.

"The cars go whiz, whiz, whiz. It's like we are living on a highway. It's horrible."

Traffic on her residential street has gotten worse every year over the past couple of years.

https://www.cbsnews.com/boston/news/iteam-waze-google-maps-traffic-navigation-apps-commuters/

Photo by Evelyn Hockstein for The Washington Post

Tim Connor lives on a quiet residential street in Takoma Park, Maryland.

One afternoon, Connor counted a vehicle every two seconds on a street with a single lane available between parked cars.

One morning, neighbors awoke to a cacophony of honks and went out to find a backup dozens of cars deep, two drivers in the middle about to come to blows.

https://www.washingtonpost.com/local/traffic-weary-homeowners-and-waze-are-at-war-again-guess-whos-winning/2016/06/05/c466df46-299d-11e6-b989-4e5479715b54_story.html

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"It's horrible."

over the past couple

1. How could Waze update its design to account for its indirect stakeholders?
2. What could the indirect stakeholders do to fight back?

~3 mins: Discuss in Pairs.

, Maryland.

on a street with a single lane available between parked cars.

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Photo by Evelyn Hockstein for The Washington Post

https://www.washingtonpost.com/local/traffic-weary-homeowners-and-waze-are-at-war-again-guess-whos-winning/2016/06/05/c466df46-299d-11e6-b989-4e5479715b54_story.html

Indirect Stakeholders: The Waze Effect

DAVID E. RYU
COUNCILMEMBER, FOURTH DISTRICT

April 17, 2018

City Attorney Mike Feuer
Office of the Los Angeles City Attorney
James K. Hahn City Hall East
200 North Main Street, 8th Floor
Los Angeles, CA 90012

Dear City Attorney,

I am writing you today to urge your office to explore filing suit against Waze, owned by Google LLC, a subsidiary of Alphabet, for creating a dangerous condition in the public right of way. After numerous attempts to reach a resolution with Waze for the threats to public safety and infrastructure caused by their mobile technology, it has become clear that any and all legal options should be considered.

Wayfinding technology such as Waze has grown increasingly popular with drivers. In 2015, Waze reported that it had about 2 million users in Greater Los Angeles, one of the app's most popular locations. This new kind of wayfinding technology promises users a faster commute by giving real-time traffic updates and alternate routes to traditional arteries. To achieve this, it can wreak undue havoc on traffic plans, residential communities, and the safety of the residents of Los Angeles. Ironically, many of these "short cuts", end up causing more traffic in a race-to-the-bottom effort to cut travel times by using small cut-through streets, leading drivers to make unsafe turns and often unpermitted traffic directions.

Indirect Stakeholders: The Waze Effect

"All roads are the public domain and therefore the right of everyone to use [...] In that sense, Waze redistributes traffic to create a better traffic situation for everyone."

– Uri Levine, Waze Co-Founder

Variation in Human Ability: Designing for Accessibility

Liz Jackson
@elizejackson

Disability Dongle: A well intended elegant, yet useless solution to a problem we never knew we had. Disability Dongles are most often conceived of and created in design schools and at IDEO.

3:49 PM · Mar 26, 2019 · Twitter Web Client

90 Retweets **17** Quote Tweets **366** Likes

Mashable
@mashable

These students just blew minds with their wheelchair prototype

5 Most Amazing Futuristic Transport Inventions Available Now 2017 Concept

2.4K views • 4 years ago

Insane Gadgets

[redacted]

Manual chairs are far too expensive for those that need them to afford, so who knows how anyone who isn't a billionaire is supposed to afford these glorified (and ugly) segways?

2 2 6

[redacted]

I'd for sure fall out going up backwards. My core strength to hold myself upright is rubbish, no way I'd be able to do that. Also, going upstairs backwards in a crowd seems like it would be.... challenging at best

2 3

[redacted]

If it takes my HMO six weeks to approve new tires for my manual wheelchair, there isn't a chance in hell that they're approving one of these 'fancy' chairs

1 1 10

[redacted]

"What's the market price, what's the lifespan of the rubberized tracks, what's the maintenance model, what's the functionality of the chair if it stops working suddenly, what's the charge-cycle of the batteries, what's the lifespan of the batteries?"

"But it looks cool!"

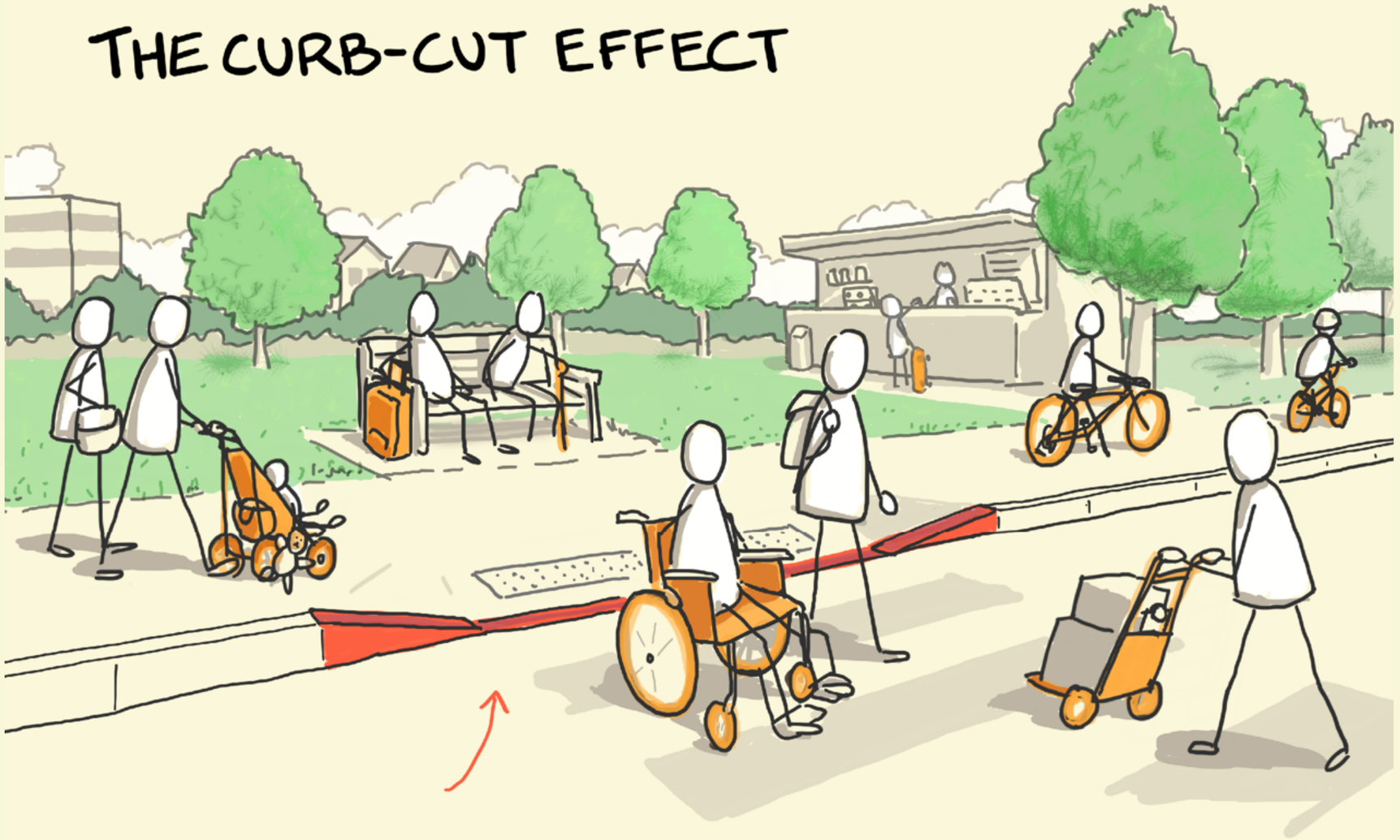
1 5

[redacted]019

Looks expensive. A simple ramp would be accessible to people who cannot afford this kind of tech as well as those with other mobility restrictions.

1 1 6

THE CURB-CUT EFFECT



WHEN WE DESIGN
FOR DISABILITIES

... WE MAKE THINGS
BETTER FOR EVERYONE

sketchplanations

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Reappropriation

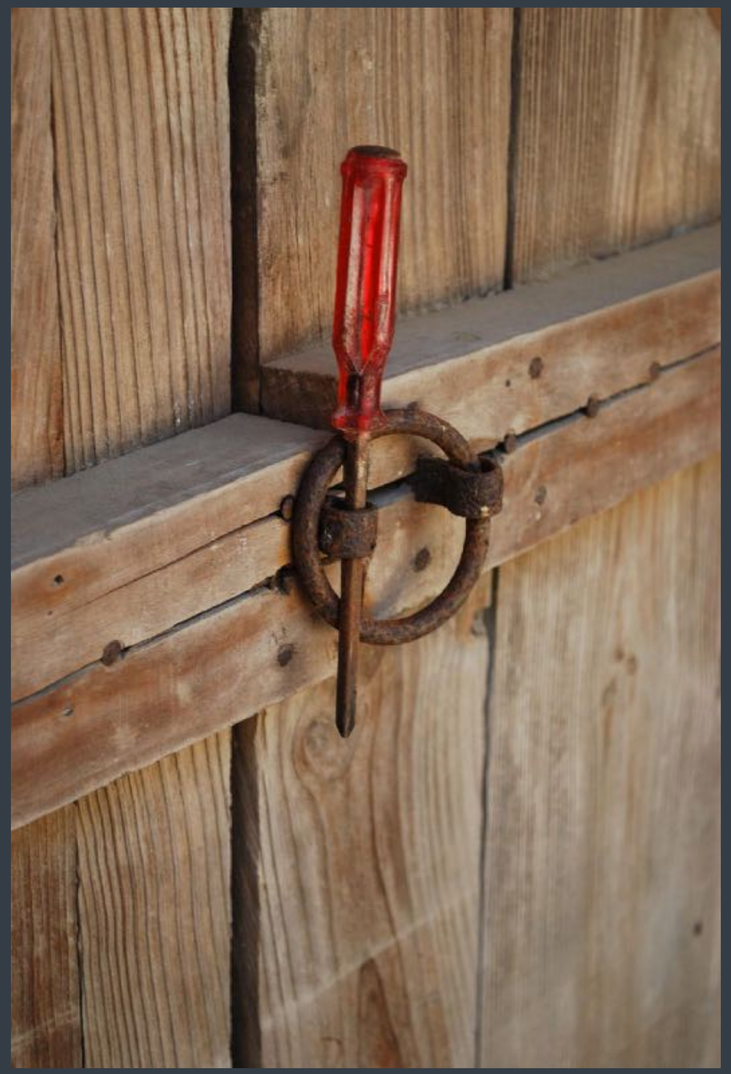
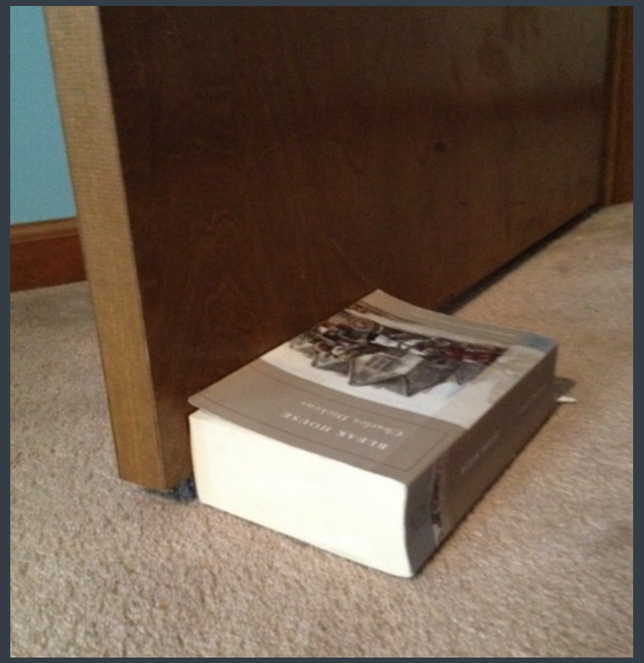
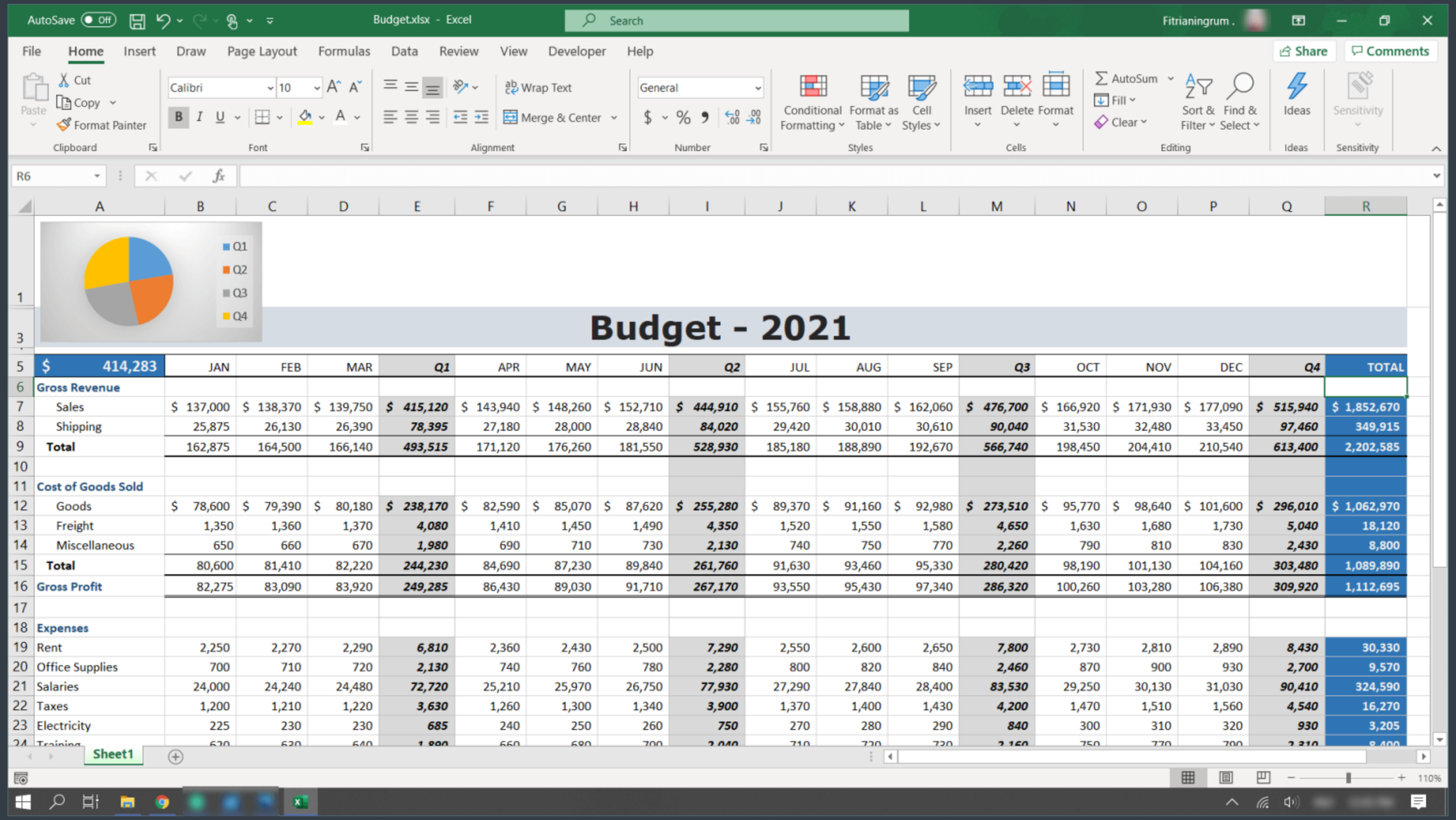


Photo by Clément Gault



Reappropriation: Malleable Software



https://blog.coupler.io/microsoft-excel-vs-google-sheets/

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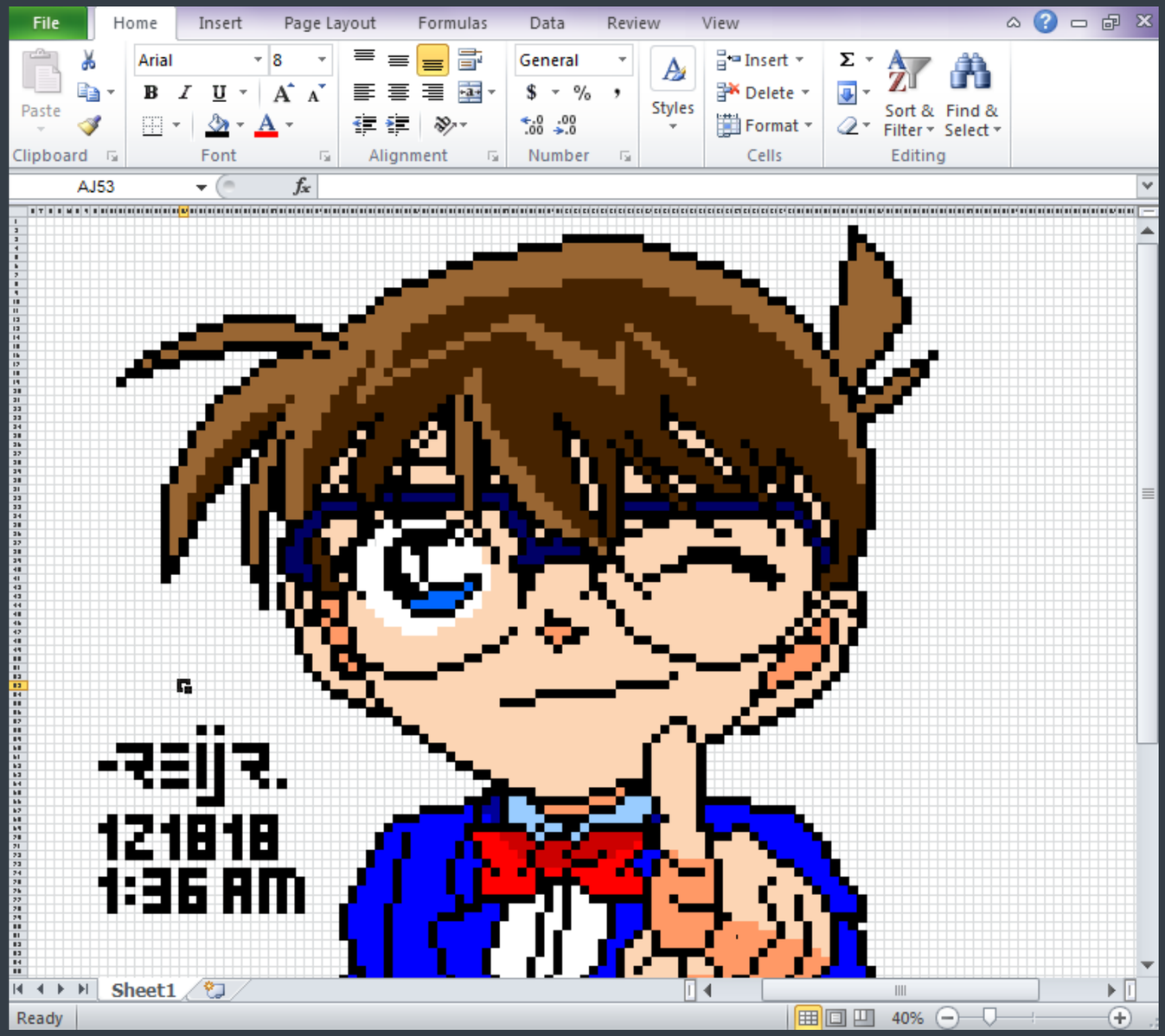
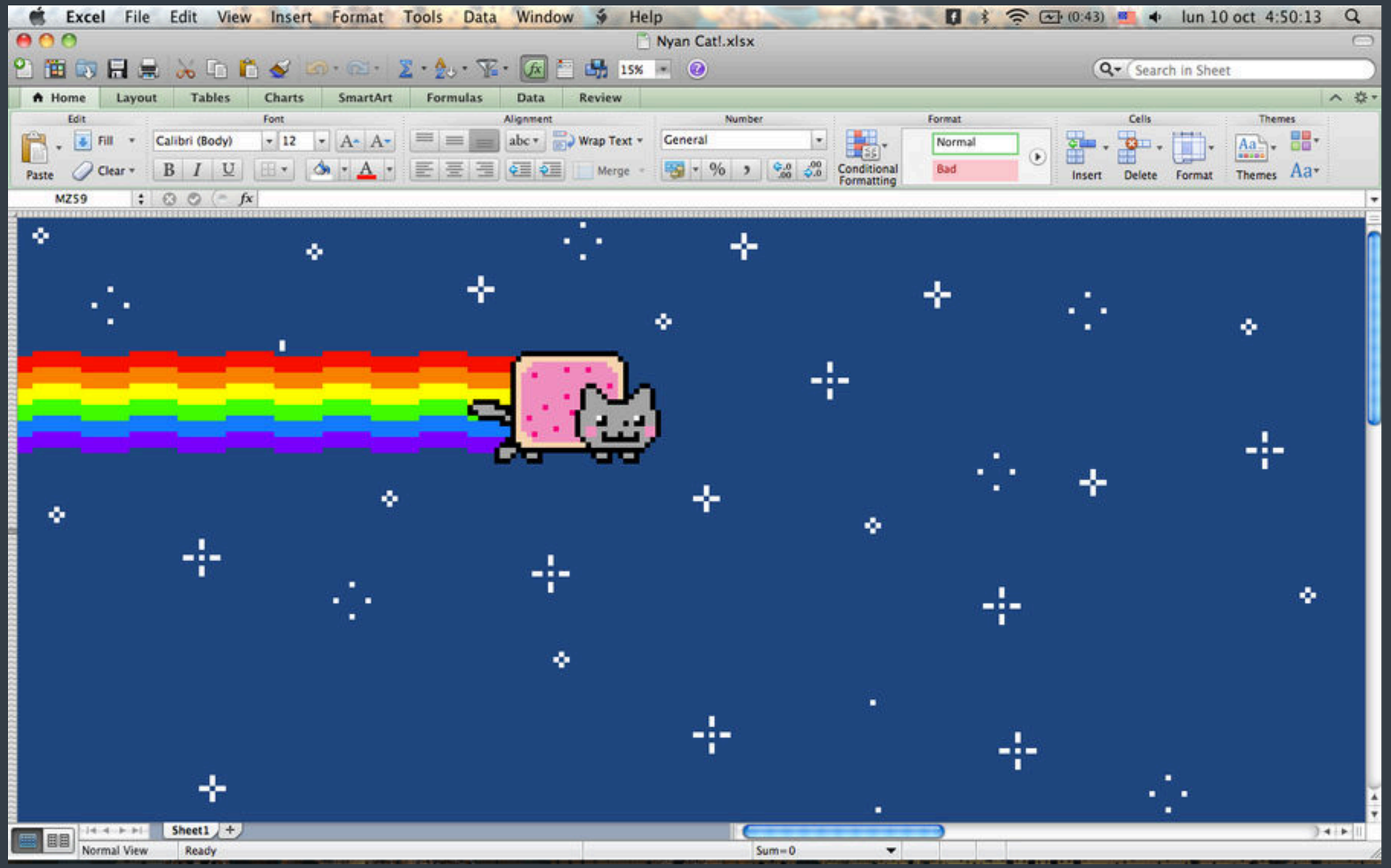


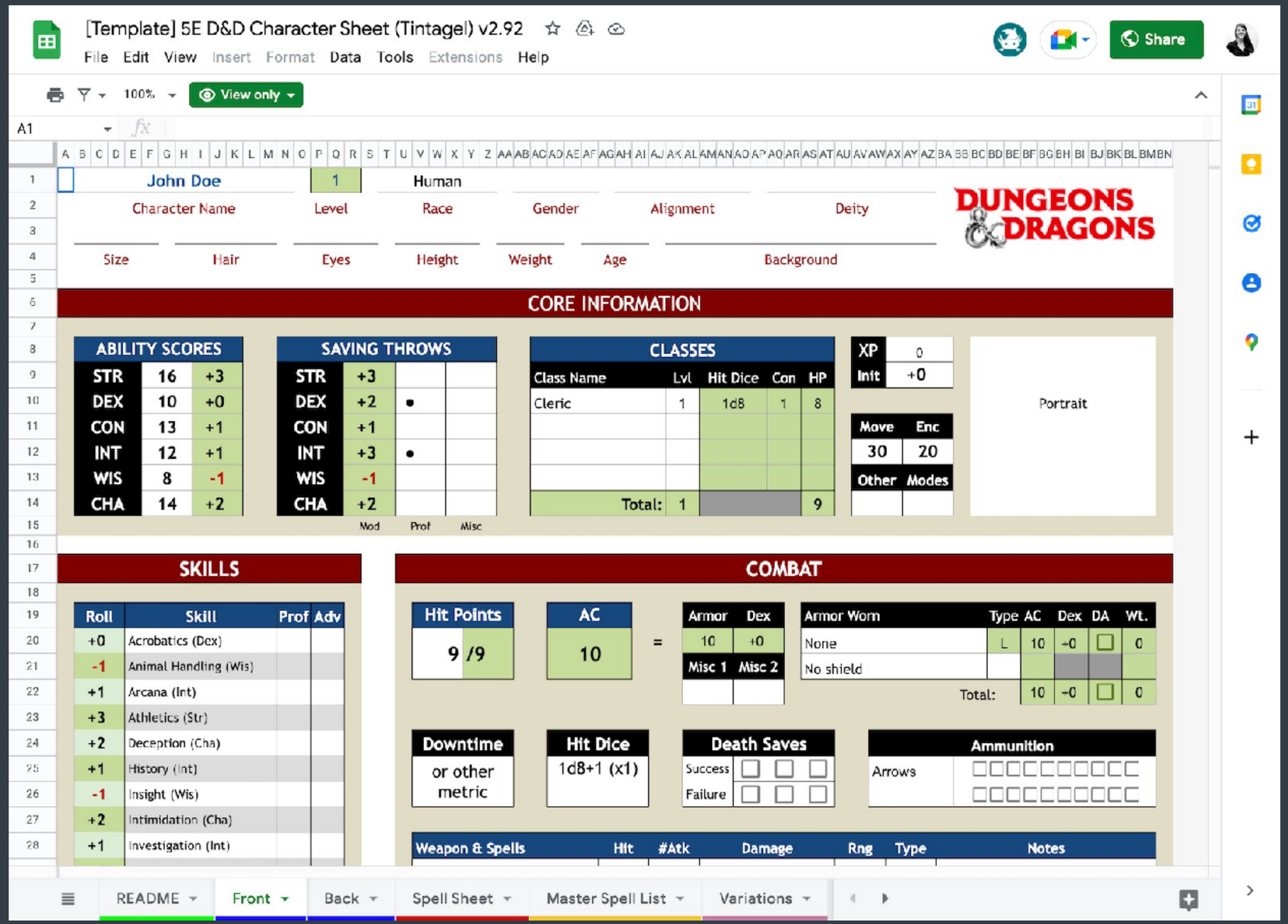
Pixel art by reijr.
Curated by Maggie Appleton

Reappropriation: Malleable Software



Pixel art by Oscarito7.
Curated by Maggie Appleton

Reappropriation: Malleable Software

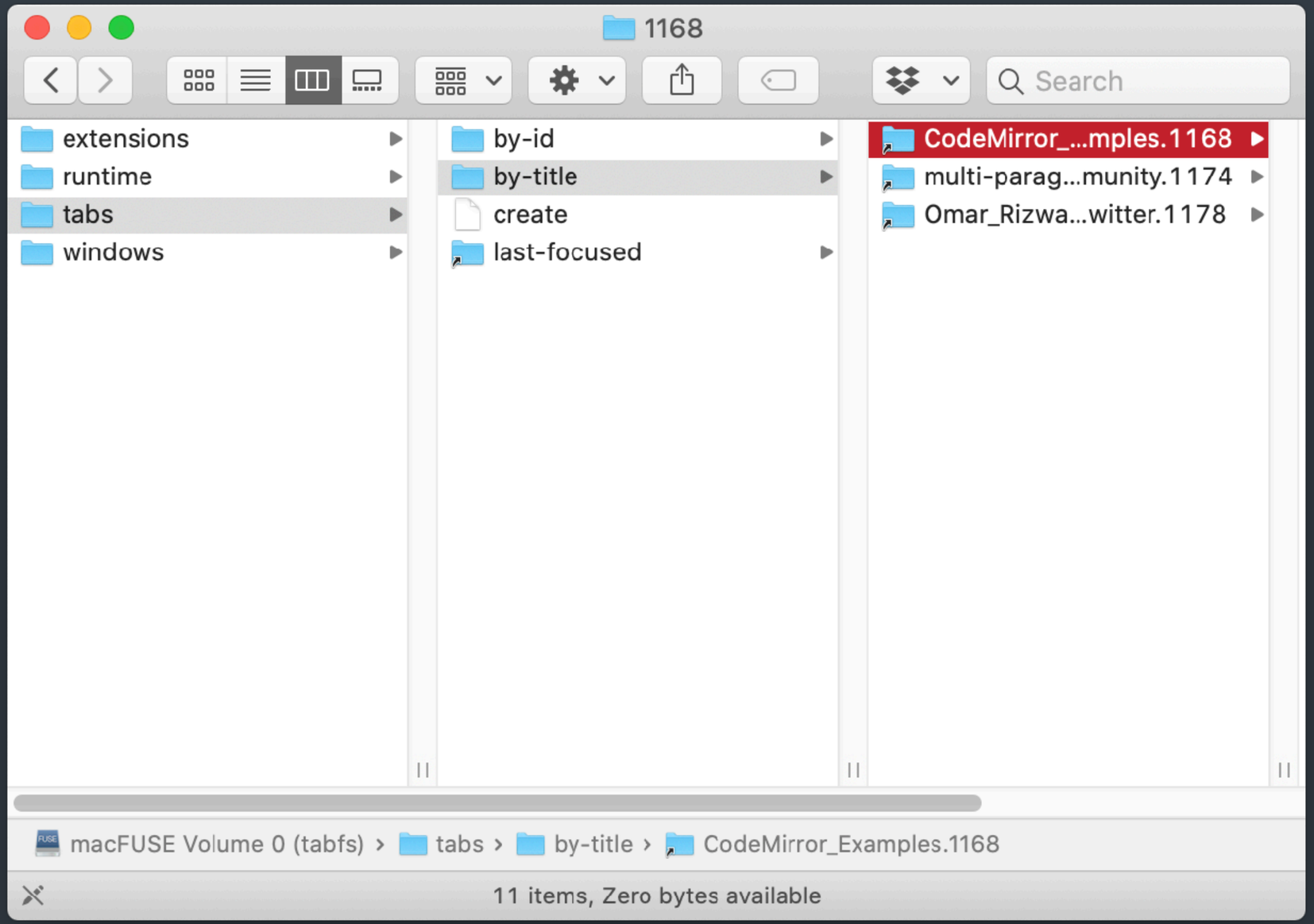


Curated by Maggie Appleton

Reappropriation: Malleable Software

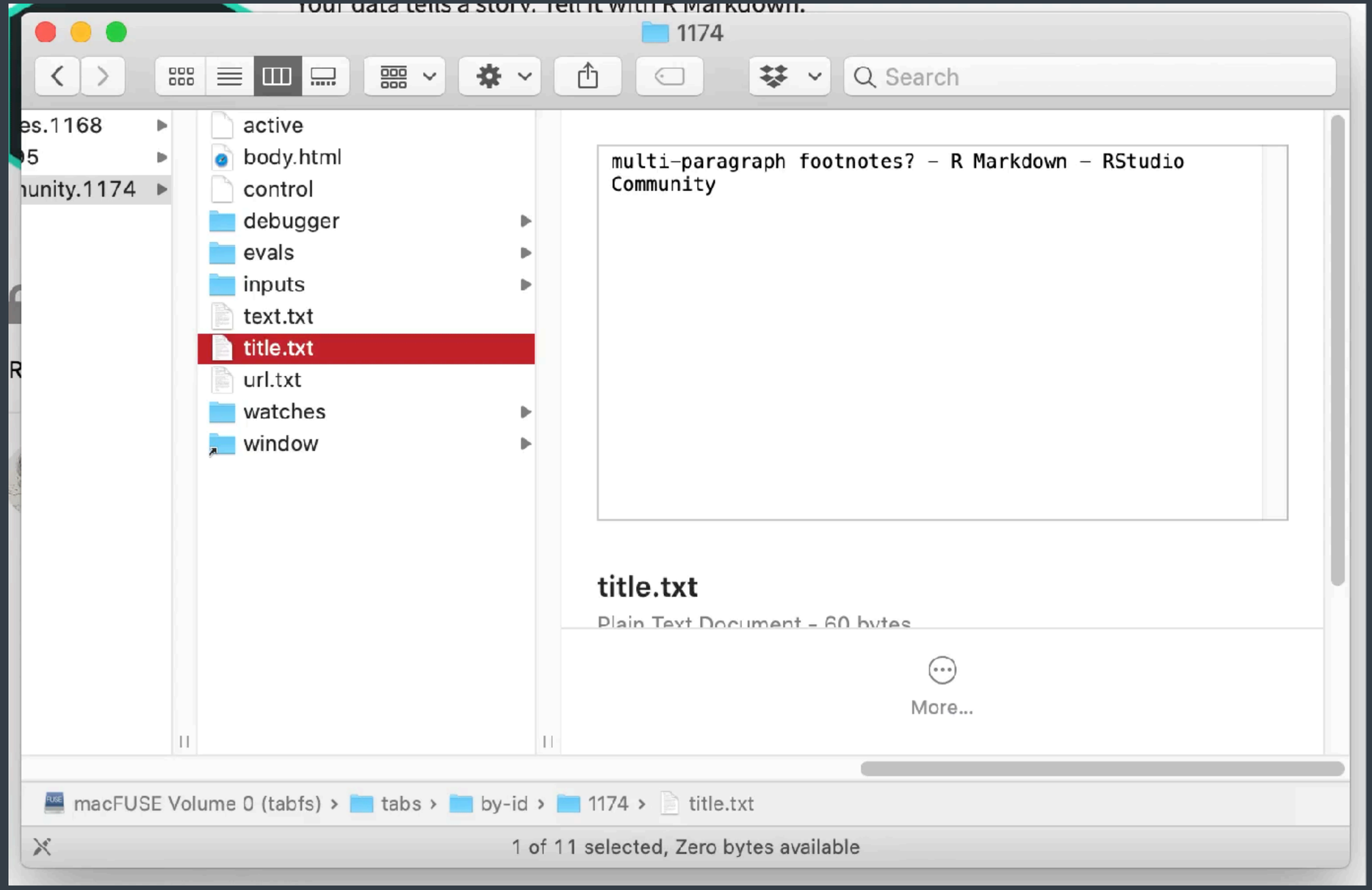
Digital Audio Workstation by Dylan Tallchief. Curated by Maggie Appleton

Reappropriation: TabFS by Omar Rizwan



https://omar.website/tabfs/

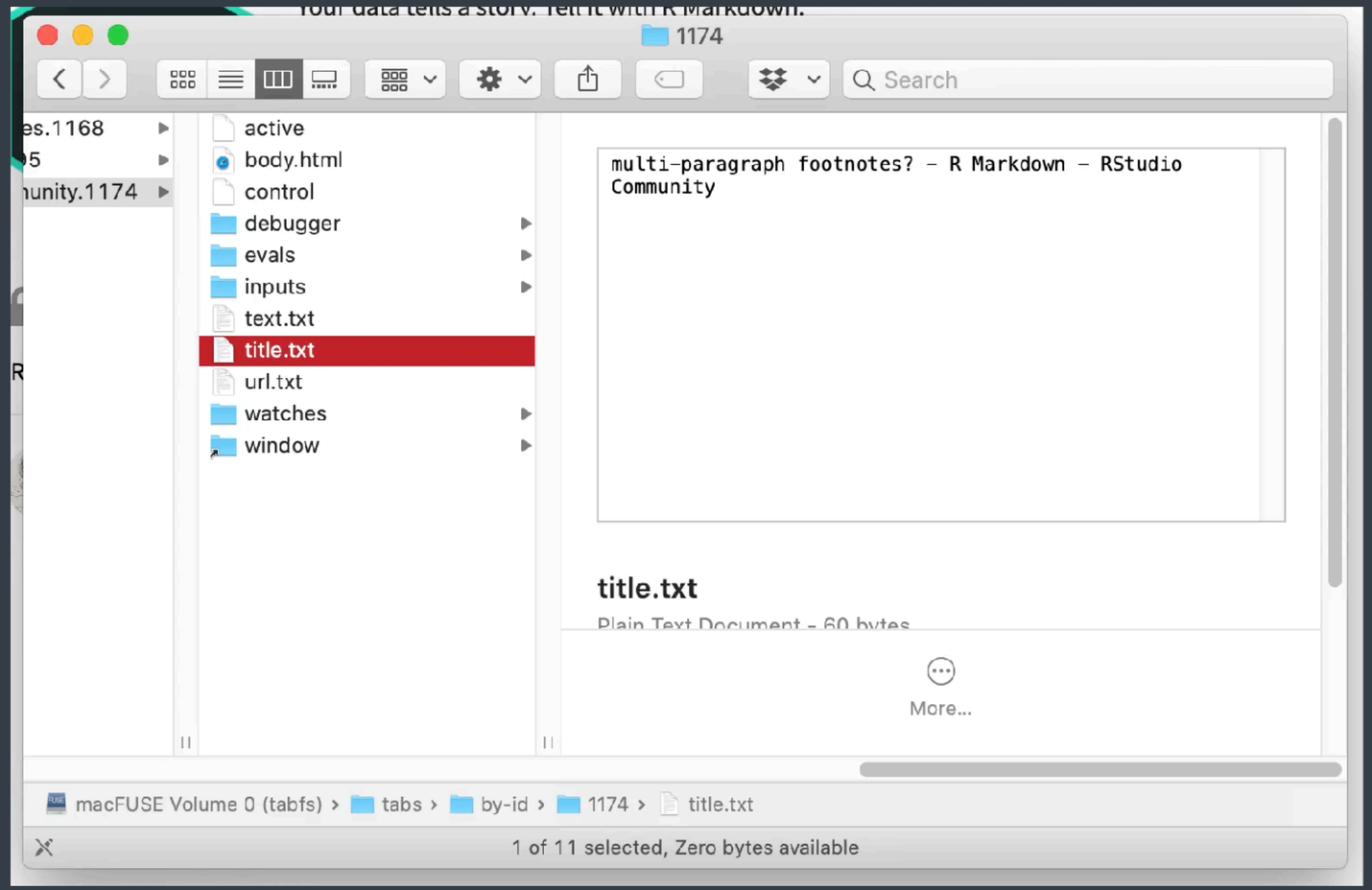
Reappropriation: TabFS by Omar Rizwan



What can you envision doing now that tabs are just files and folders?

~3 mins: Pair Discussion.

Reappropriation: TabFS by Omar Rizwan

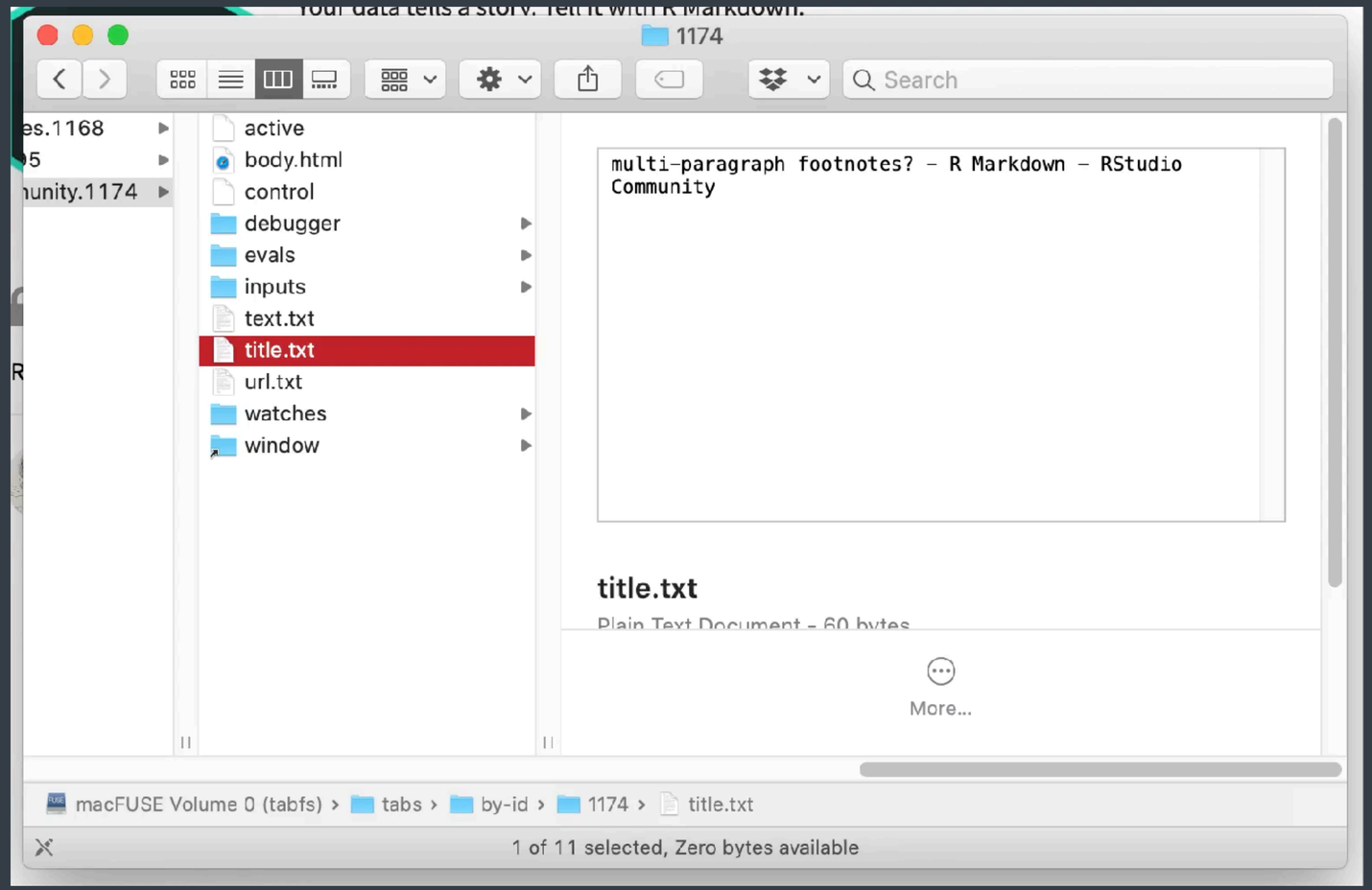


https://omar.website/tabfs/

List titles of all open tabs:

```
$ cat mnt/tabs/by-id/*/title.txt
GitHub
Home / Twitter
61040 Discourse
```

Reappropriation: TabFS by Omar Rizwan

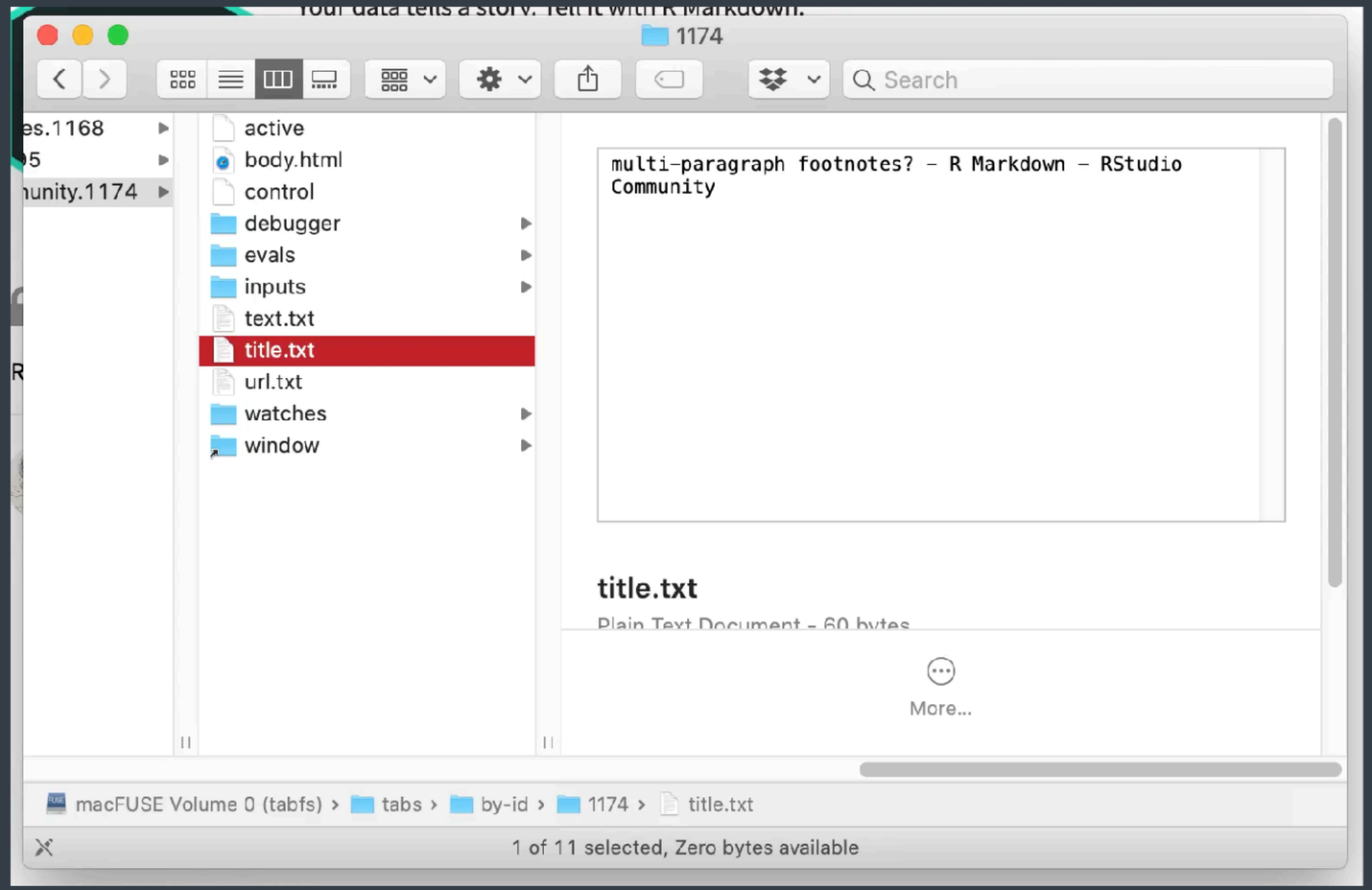


https://omar.website/tabfs/

Close all Stack Overflow tabs:

```
$ rm mnt/tabs/by-title/*Stack_Overflow*
```

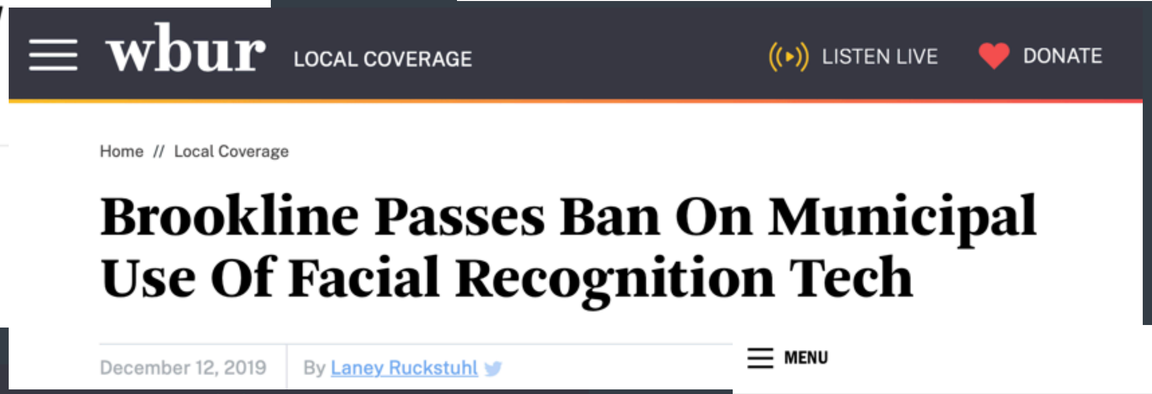
Reappropriation: TabFS by Omar Rizwan

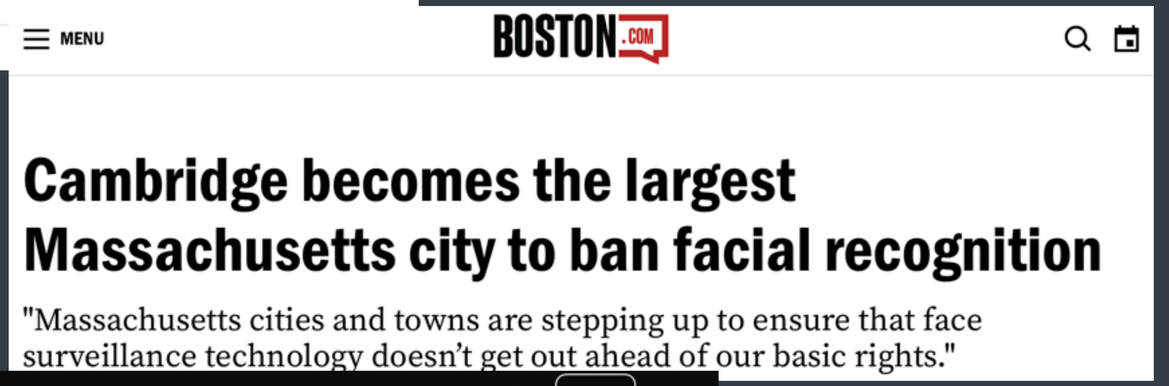


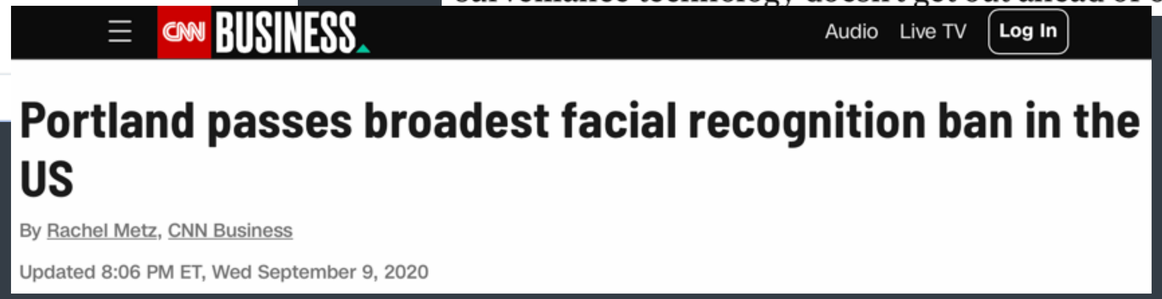
Live edit body.html in your favourite code editor

https://omar.website/tabfs/

Choosing Not to Use







Choosing Not to Use: Face Recognition

ELECTRONIC FRONTIER FOUNDATION

About Issues Our Work Take Action Tools Donate

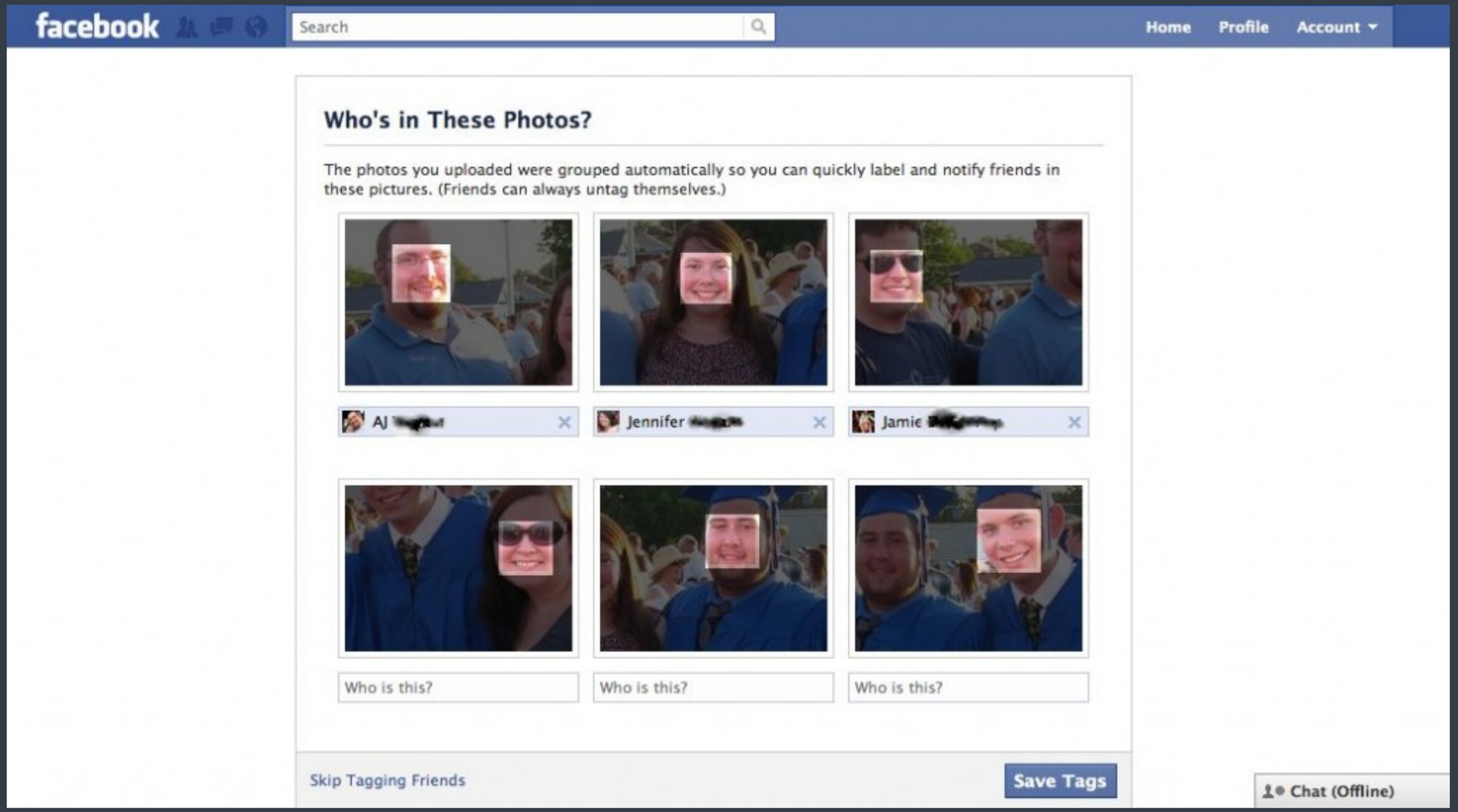
Resisting the Menace of Face Recognition

BY ADAM SCHWARTZ | OCTOBER 26, 2021

ESPAÑOL

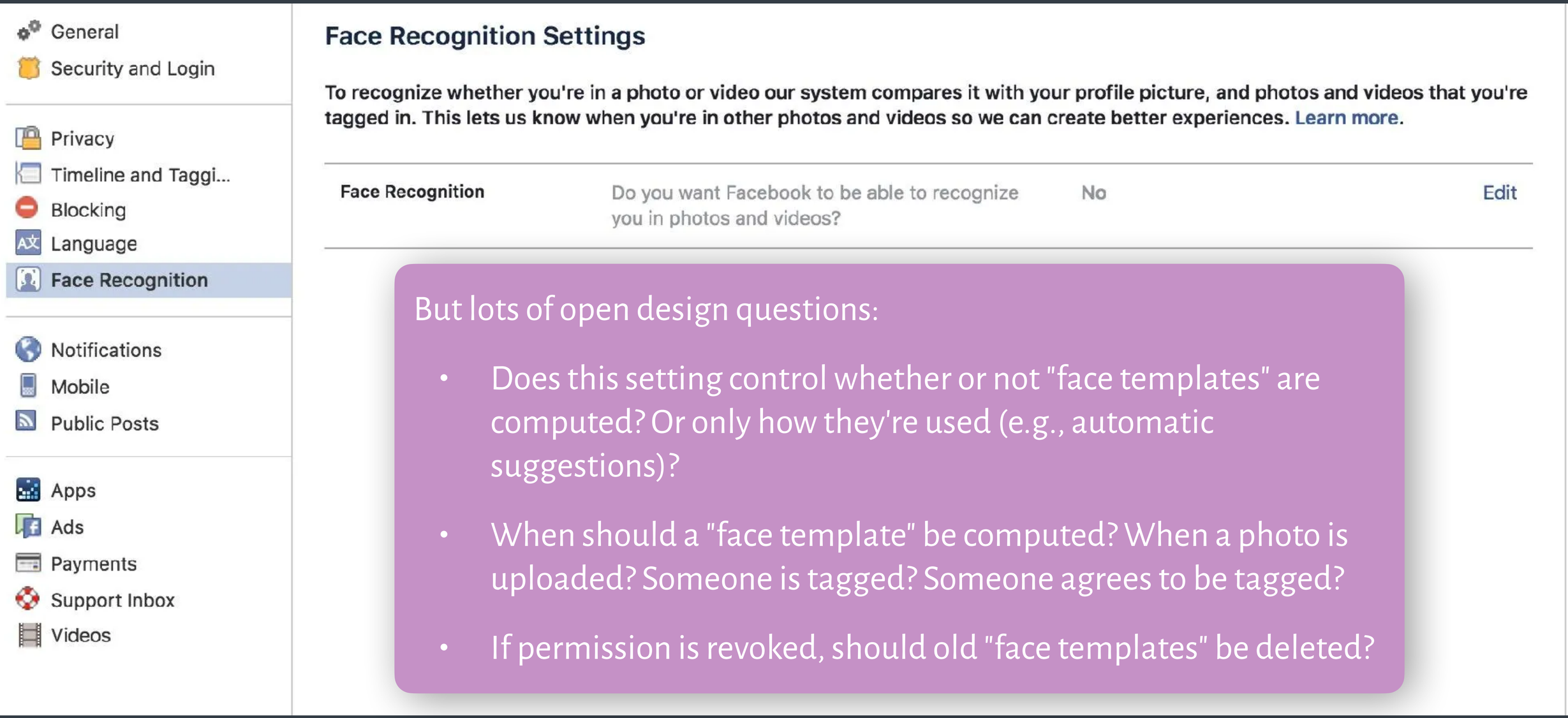
Face recognition technology is a special menace to privacy, racial justice, free expression, and information security. Our faces are unique identifiers, and most of us expose them everywhere we go. And unlike our passwords and identification numbers, we can't get a new face. So, governments and businesses, often working in partnership, are increasingly using our faces to track our whereabouts, activities, and associations.

Choosing Not to Use: Face Recognition



https://www.business2community.com/social-media-articles/how-to-opt-out-of-facebook-auto-tags-038181

Choosing Not to Use: Face Recognition



But lots of open design questions:

- Does this setting control whether or not "face templates" are computed? Or only how they're used (e.g., automatic suggestions)?
- When should a "face template" be computed? When a photo is uploaded? Someone is tagged? Someone agrees to be tagged?
- If permission is revoked, should old "face templates" be deleted?

Screenshot by Jason Cipriani/CNET

Choosing Not to Use: Face Recognition

The New York Times

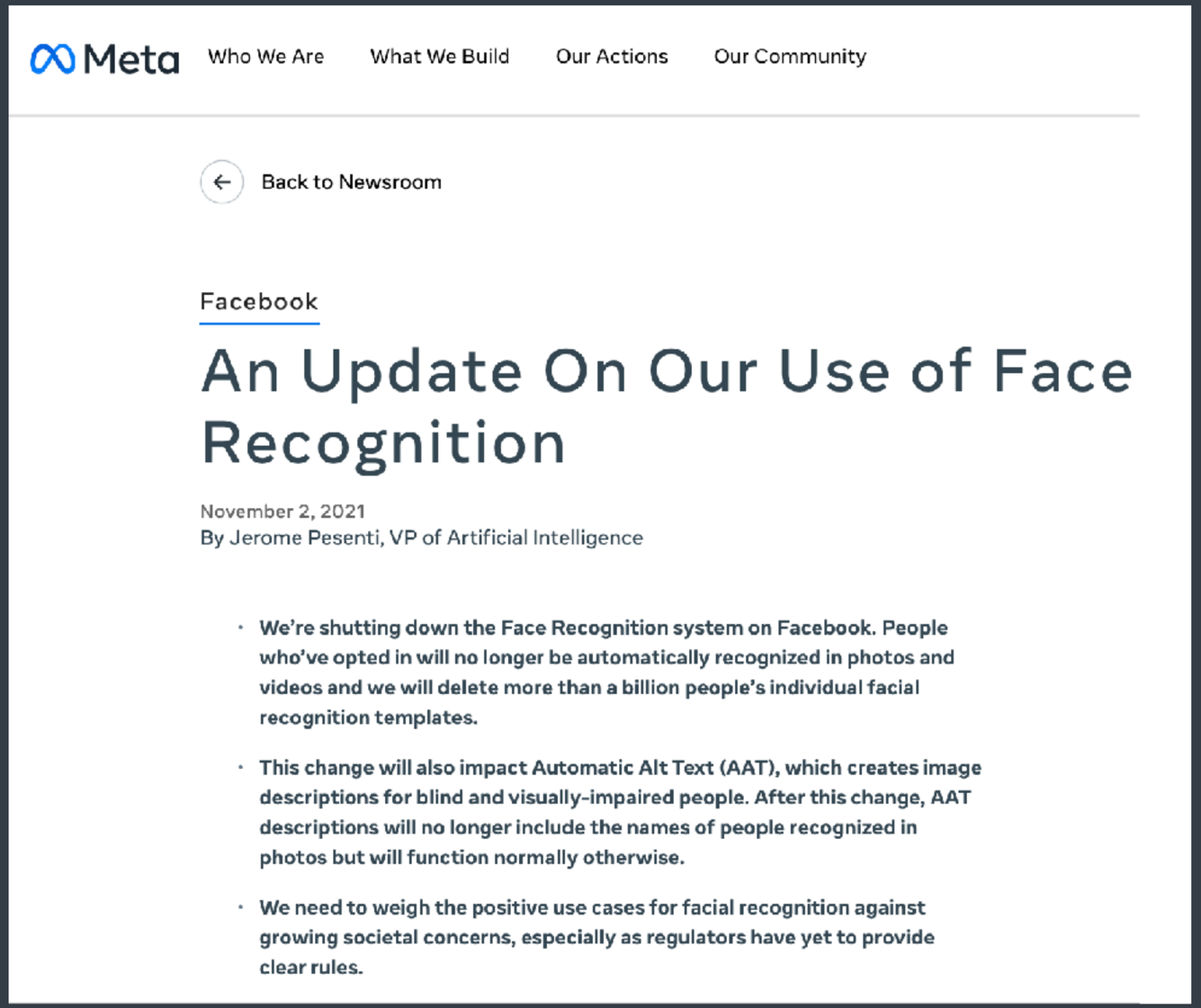
Facebook to Pay $550 Million to Settle Facial Recognition Suit

It was another black mark on the privacy record of the social network, which also reported its quarterly earnings.

Give this article

By Natasha Singer and Mike Isaac

Jan. 29, 2020



Meta Who We Are What We Build Our Actions Our Community

Back to Newsroom

Facebook

An Update On Our Use of Face Recognition

November 2, 2021

By Jerome Pesenti, VP of Artificial Intelligence

- We're shutting down the Face Recognition system on Facebook. People who've opted in will no longer be automatically recognized in photos and videos and we will delete more than a billion people's individual facial recognition templates.
- This change will also impact Automatic Alt Text (AAT), which creates image descriptions for blind and visually-impaired people. After this change, AAT descriptions will no longer include the names of people recognized in photos but will function normally otherwise.
- We need to weigh the positive use cases for facial recognition against growing societal concerns, especially as regulators have yet to provide clear rules.

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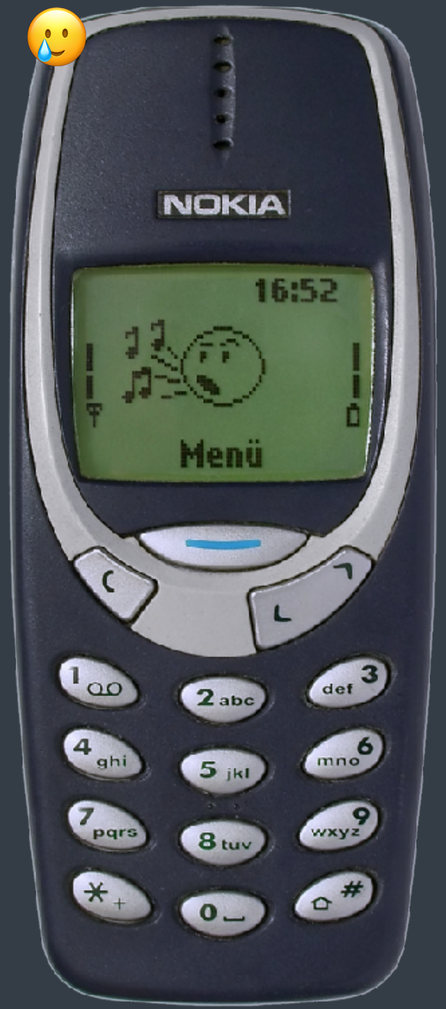
Widespread Use: Text Autocomplete

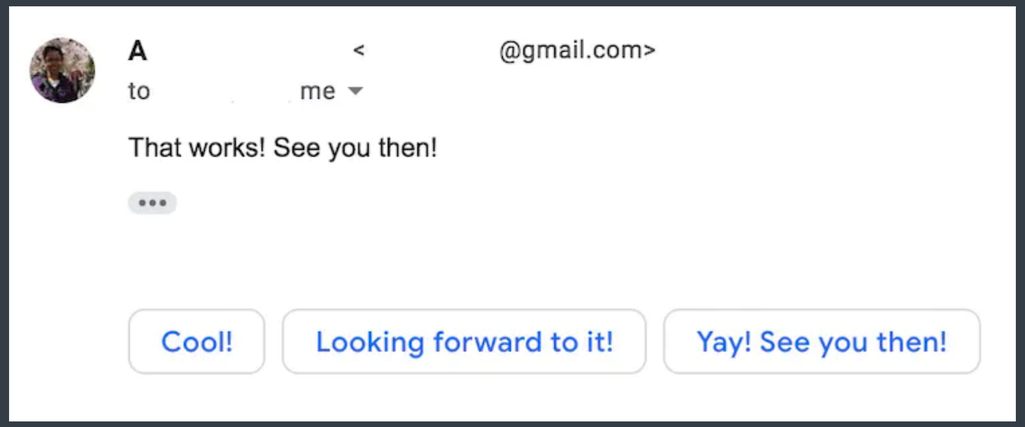


By smial (talk) at English Wikipedia.

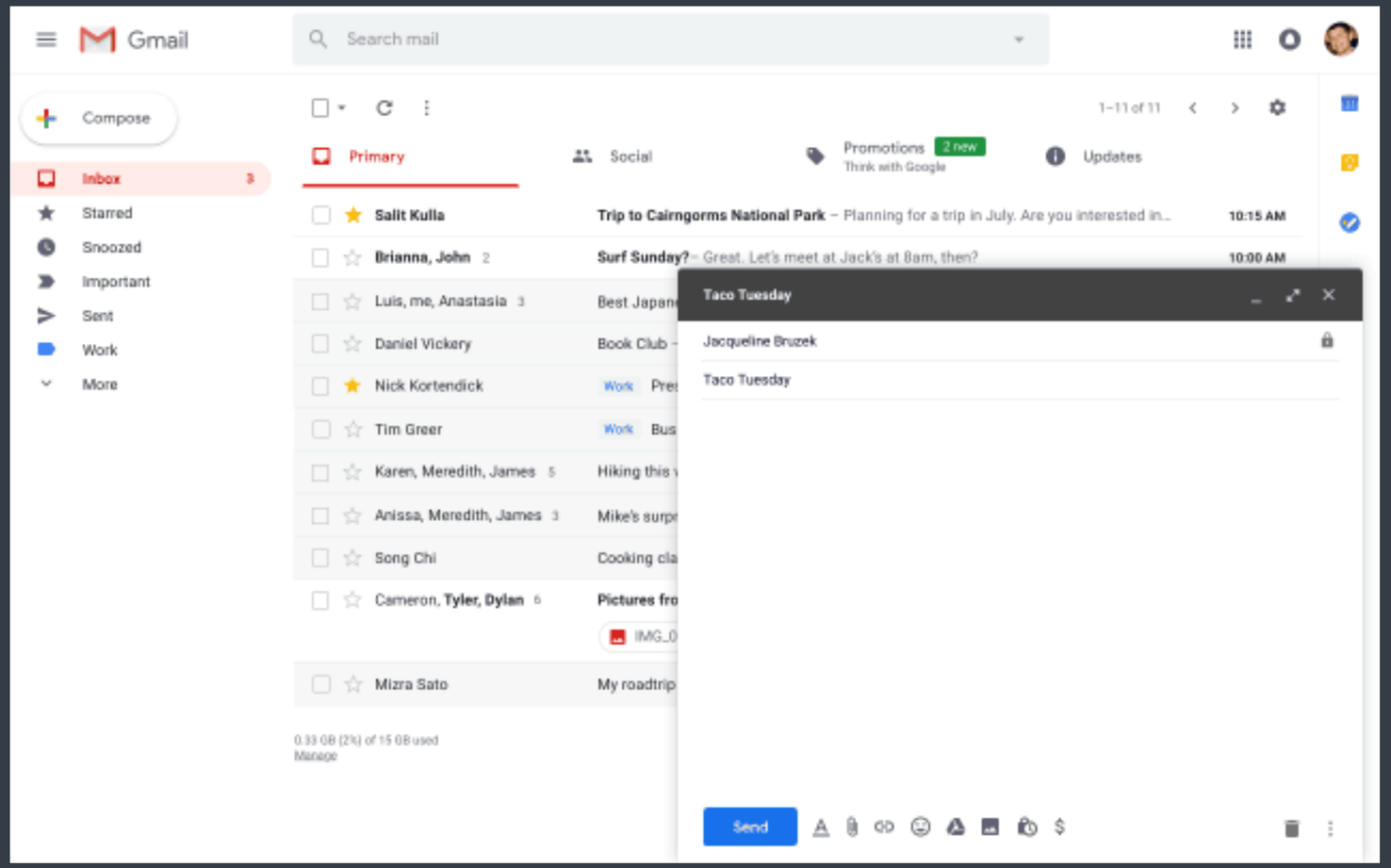
By The Digital Owl.

From Engadget

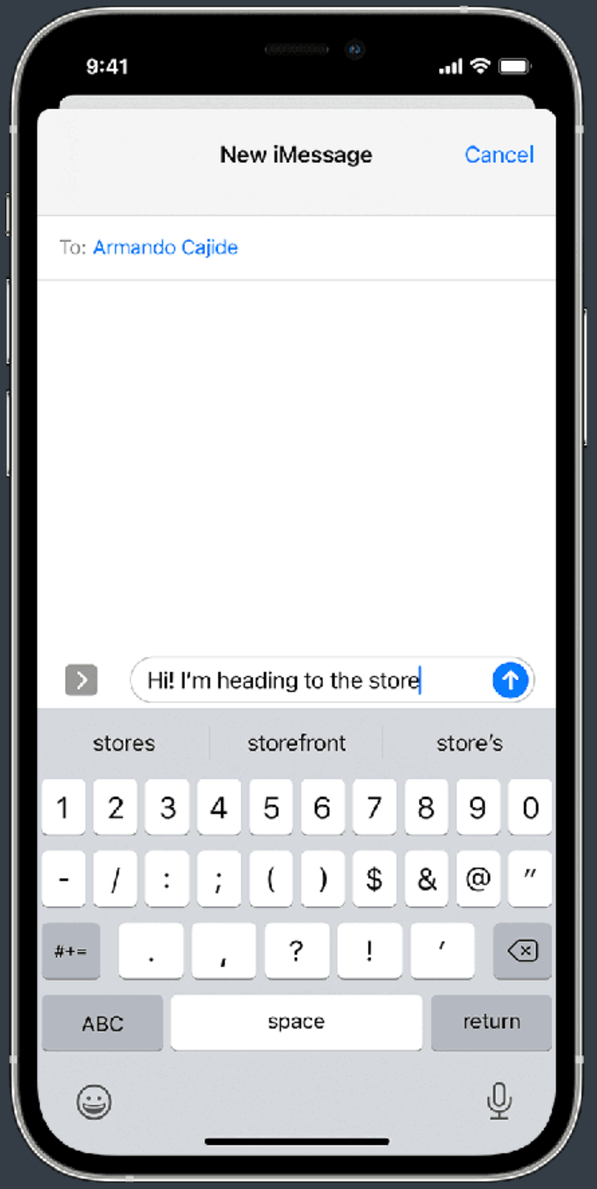
Smart Reply



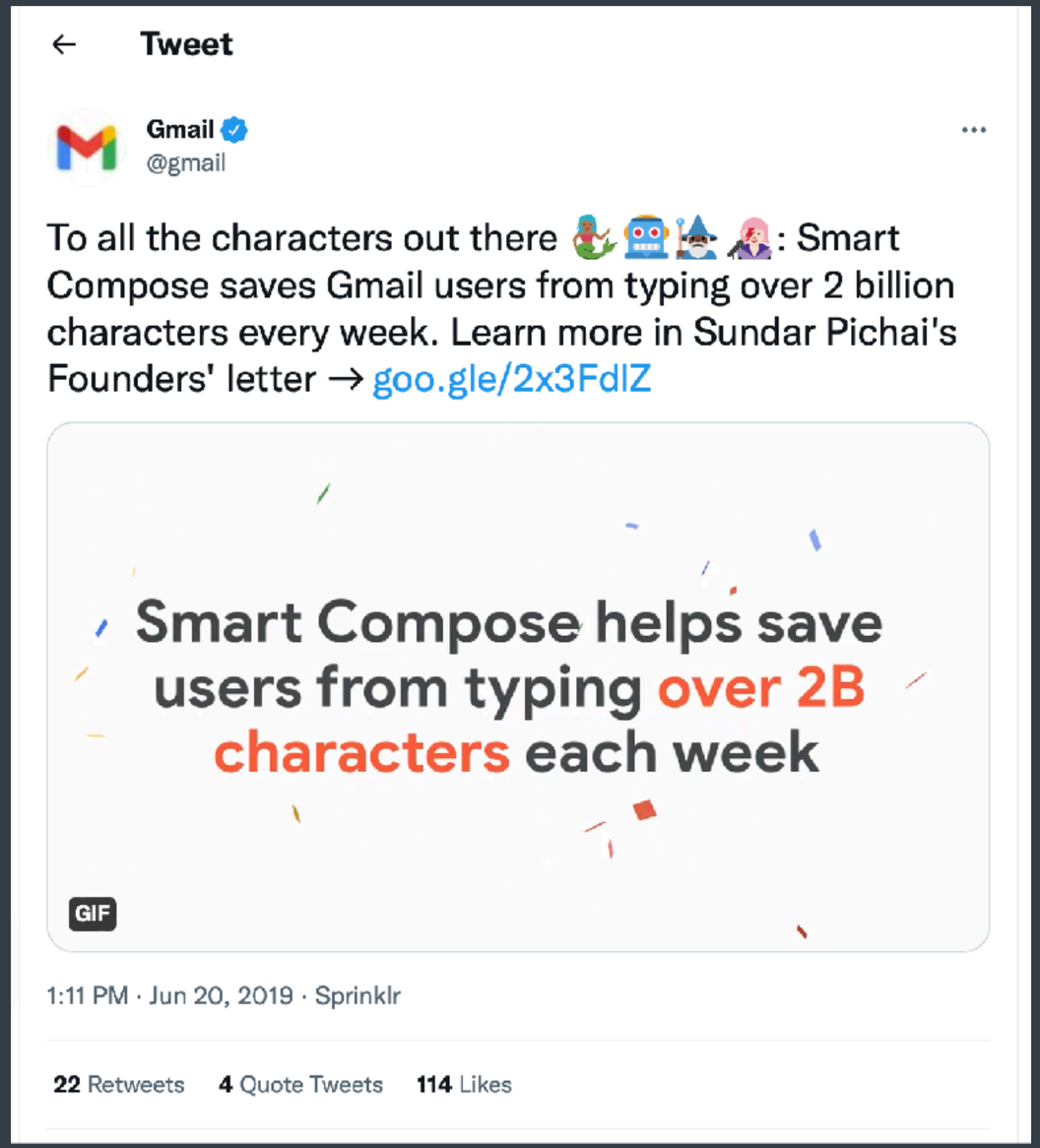
Smart Compose



Predictive Text



Widespread Use: Text Autocomplete



Paradox:

- Making it easier to send emails ➞ increases overall number of emails people send!
- Making it easier to send emails ➞ changes social norms/expectations ➞ pressure to be responsive

Value Sensitive Design: 4 Criteria

Stakeholders

Direct Stakeholders · **Indirect Stakeholders** · Non-targeted Use

Children · **Variation in Abilities** · Changing Hands · One Person, Many Roles

Time

The Long Now · Long-Term Health & Well-Being · Sustained Friendships

Work of the Future · Adaptation · **Non-Use** · Obsolescence · **Reappropriation**

Pervasiveness

Widespread Use · Diverse Geographies · Crossing National Boundaries

Accounting for Culture · Political Realities

Values

Elicit Stakeholder Values · Consider Key Values at Stake · Choose Desired Values

Evaluate User Experience of Values · **Value Tensions** · Perceptions of a Value

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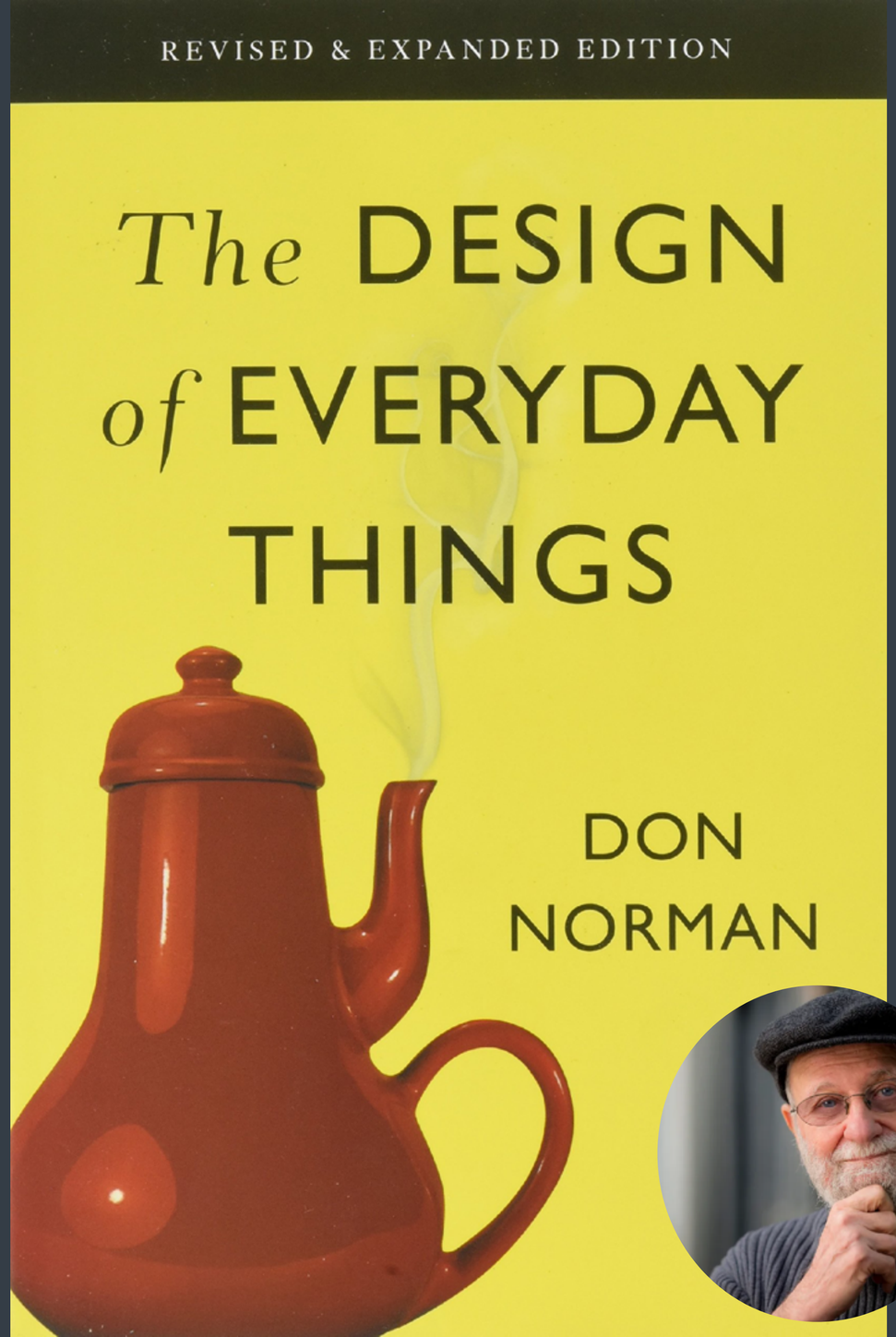

Designers are asked to figure out how to manage the interaction of technology and people. Good designers are quick learners, for today they might be asked to design a camera; tomorrow, to design a transportation system or a company's organizational structure. How can one person work across so many different domains? Because the fundamental principles of designing for people are the same across all domains. People are the same, and so the design principles are the same.

Designers are only one part of the complex chain of processes and different professions involved in producing a product. Although

Photo from J. Nathan Matias (@natematias)

Software is *not neutral*

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Developing software involves a series of **design choices and tradeoffs**, large and small.

Each design decision is **implicitly encoding *your* values and priorities**.

Through adoption, those values are then **applied at scale**.

Those design choices then begin to **shape our values**.

Poster by Alvy Brooks (@alvybrooks)

Photo from Sam Altman (@sama)

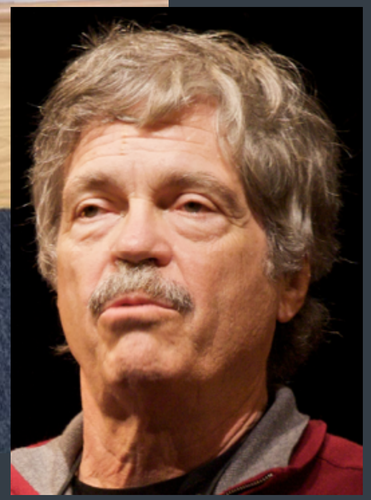

Photo by Marcin Wichary