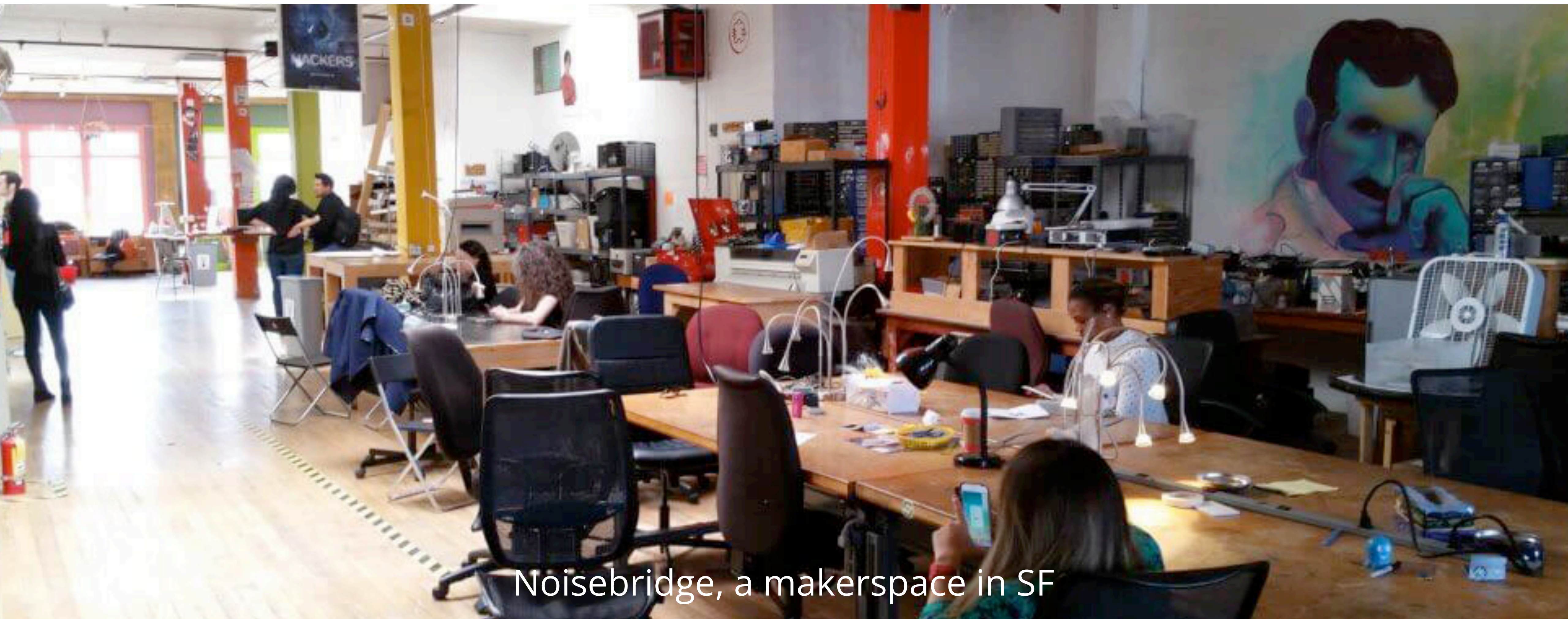


# CS181DT Class 2: Making & hacking culture



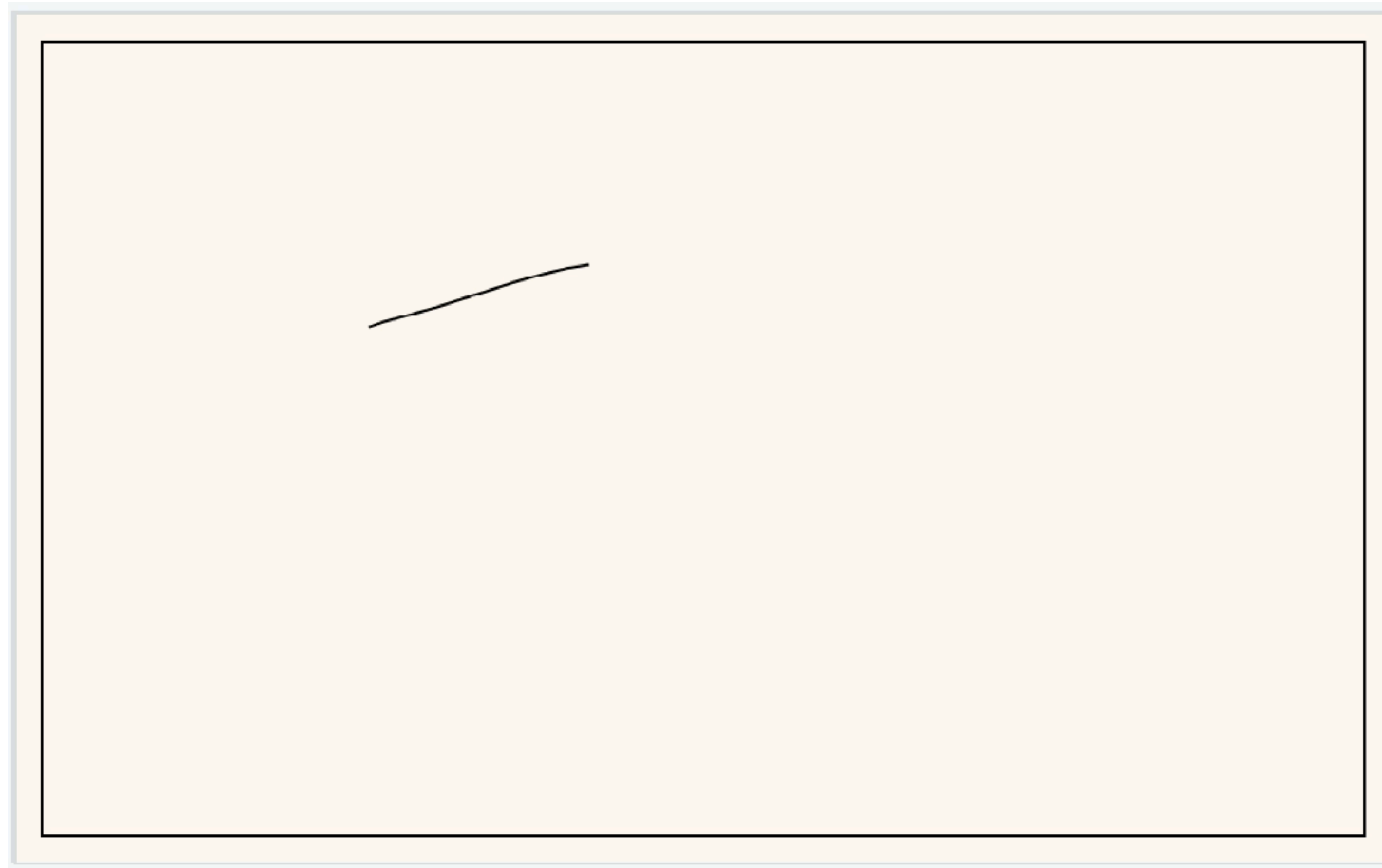
Noisebridge, a makerspace in SF



# Class 2 agenda

- Zipcrit sample from me
- ZC/seminar assignments
- Lecture: A history of making and hacking culture
- Course norms
- Break
- Example seminar: Making & AI art

# Zipcrit: Fishdraw <https://fishdraw.glitch.me/>



Learning note 1: nothing on the Internet lasts forever. Print stuff out

## usage

### basic

```
node fishdraw.js > output.svg
```

specify seed (from a string), speed of drawing and output format:

```
node fishdraw.js --seed "Biggus fishus" --format smil --speed 2 > output.svg
```

- the seed string is used as the name of the fish (printed in the drawing). If unspecified, a random pseudo-Latin name will be auto generated.
- the speed number is used to control the speed of drawing animation. Larger the number is, faster it draws. This option works only with format `smil`.
- format options: `svg` (regular svg), `smil` (animated svg), `csv` (each polyline on a comma-separated line) and `json`.

use as JS library:

```
const {fish,generate_params} = require('./fishdraw.js');  
let polylines = fish(generate_params());  
console.log(polylines);
```

What degree of interactivity is required for a human to feel like they're "making art"?

How would you compare using Fishdraw to using text to image generators (e.g., Midjourney)? Does it feel like you have more or less control? Is that bad? Do you have different goals?

# Zipcrit schedule

Date	Presenter(s)	
Jan 26	Jack C	
Jan 28	Harper	
Feb 2	Emma	
Feb 4	Adrian	
Feb 9	River	
Feb 16	Bailey	
Feb 18	Nicole	
Feb 23	Bryson	
Feb 25	Ivyer	
Mar 2	Vika	
Mar 4	Claudio	
Mar 9	Kellie	
Mar 11	Aiko	
Mar 23	Lenny	
Mar 25	Biruk	
Mar 30	Cris	
Apr 1	Leo	
Apr 6	PJ	
Apr 8	Nina	
Apr 13	Kalyani	
Apr 15	Jack G	
Apr 20	Alyssa	
Apr 22	Ishika	
Apr 27	Joey	
Apr 29	Francisco, Sultan	
May 4	Dualeh	



Both are linked on Canvas

Topic	Date	Presenter Group A	Presenter Group A	Presenter Group B	Presenter Group B	Presenter Group C
Design tools for DFAB	Feb 4	Biruk	Kellie			
Design for protest	Feb 16	Harper	Nicole			
Friction & thrownness	Feb 18	Emma	Cris			
CSTs & their evaluation	Feb 25	Leo	Bailey	Dualeh	Nina	
Embodiment & empathy	Mar 23	Kalyani	Vika			
Critical design	Apr 1	Claudio	River			
Research through design	Apr 6	Aiko	Ivyer	Jack G	Francisco	
Materiality & craft	Apr 13	Alyssa	PJ			
TBD	Apr 15	Sultan	TBD			
Power & ecosystems	Apr 20	Ishika	Jack C			
Gen AI & creativity	Apr 27	Bryson	Joey	Lenny	Adrian	

# Seminar schedule



Submit your slides for zipcrit and seminar on Canvas:

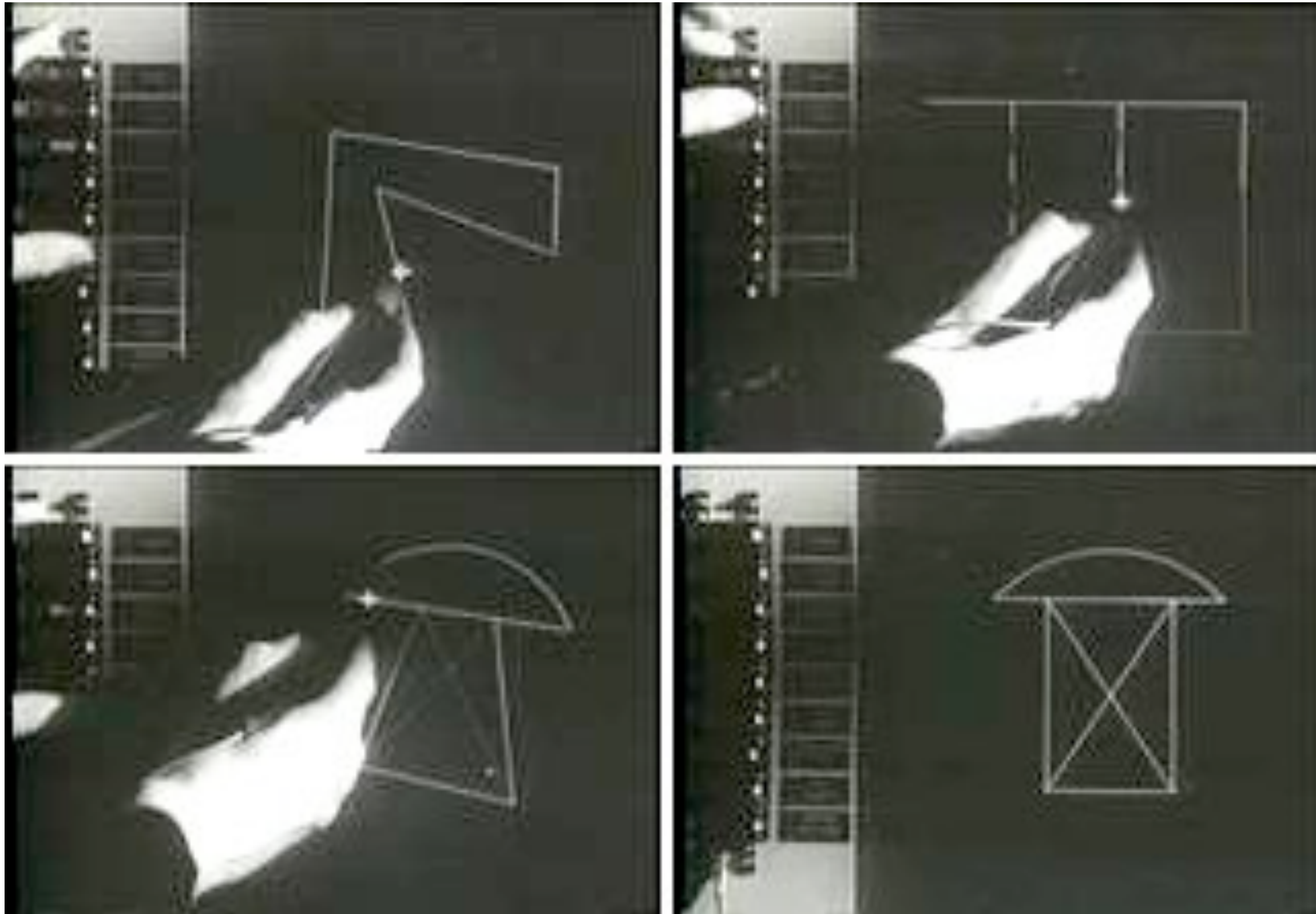
⋮ ▼ Zipcrit/Seminar slides upload		✓ ▼	+	⋮
⋮	 <b>Zipcrit</b> 100 pts	✓	⋮	
⋮	 <b>Seminar lead</b> 100 pts	✓	⋮	



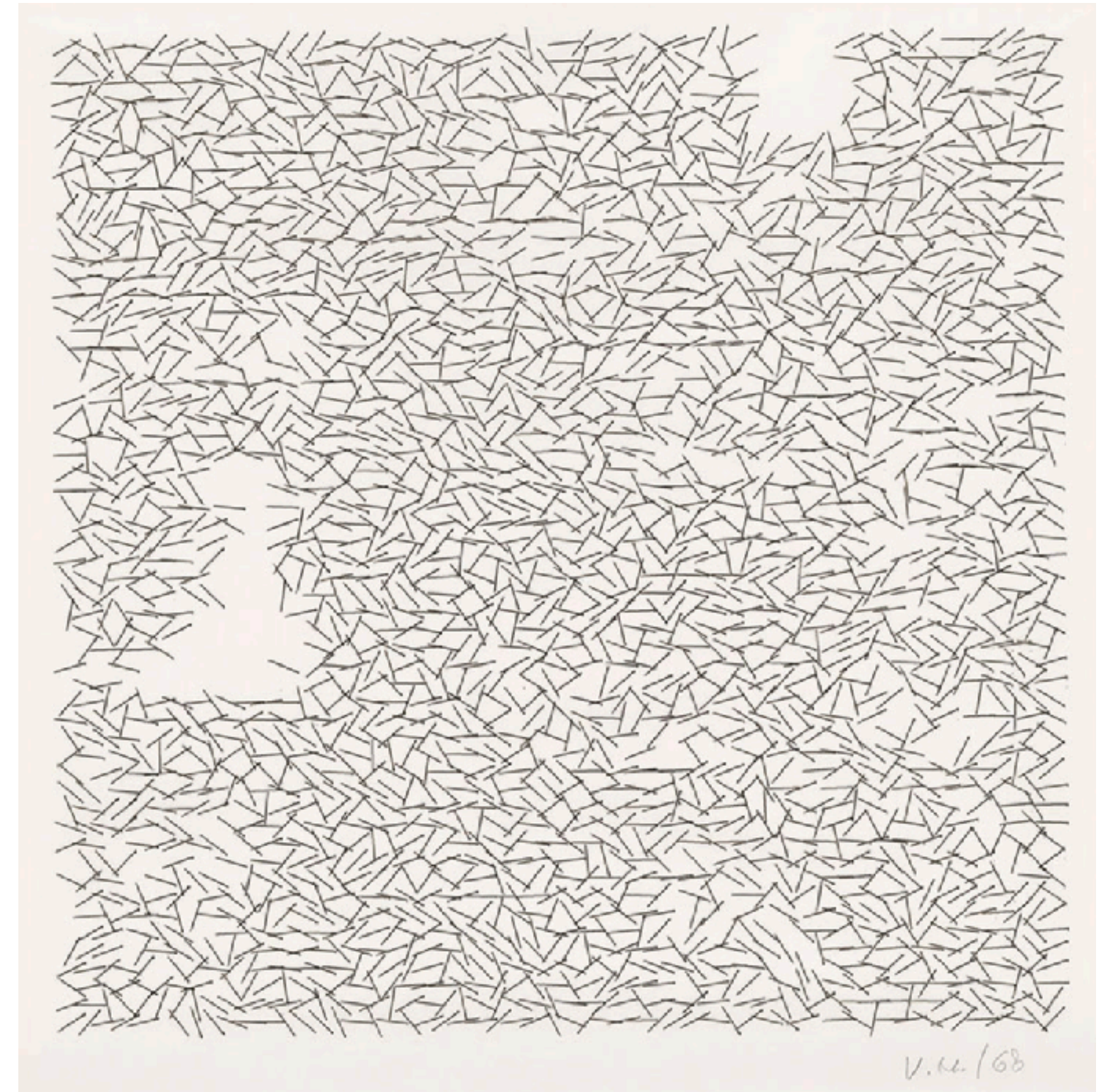
# **A history of making and hacking culture**



# People have been making things with computers for a long time.



Ivan Sutherland, Sketchpad (1963)



Vera Molnar, Interruptions (1968)



# People have been making things with computers for a long time.



“Someday artists will work with capacitors, resistors, and semiconductors as they work today with brushes, violins, and junk.”

– Nam June Paik, 1965

Nam June Paik, Magnet TV, 1965



# 2010s: Maker movement zeitgeist

COLLEGE MAGAZINE  
**Pomona**

[Home](#) [Features](#) [Letters](#) [Pomona Today](#) [Daring Minds](#) [Class Acts](#)

## What Is the Hive? (And Why Is Everyone Buzzing About It?)

What is creativity? How does it happen? Is it inborn or can it be taught?

December 2, 2015 by Mark Wood

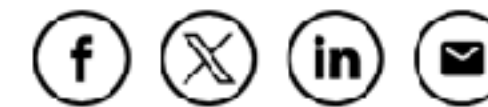


Photo by Mark Wood

## HMC Celebrates Groundbreaking of New Computer Science Center

October 7, 2019

SHARE STORY



by Liam Chalk '23


Harvey Mudd College held a groundbreaking ceremony on Sept. 28 for the new McGregor Computer Science Center, which will include a Makerspace, recording studios and other community resources. The new building's three stories and 36,000-square-foot structure should also help alleviate some of the strain placed on the school's expanding computer science department.




# 2010s: Maker movement zeitgeist








[HARDWARE](#)[SOFTWARE](#)[CLOUD](#)[DOCUMENTATION](#)[COMMUNITY](#)[BLOG](#)[ABOUT](#)



### WHAT IS ARDUINO?

Arduino is an open-source electronics platform based on easy-to-use hardware and software. It's intended for anyone making interactive projects.


[Learn more about Arduino](#)



### ARDUINO BOARD

Arduino senses the environment by receiving inputs from many sensors, and affects its surroundings by controlling lights, motors, and other actuators.

[Discover the official Arduino boards](#)



### ARDUINO SOFTWARE

You can tell your Arduino what to do by writing code in the Arduino programming language and using the Arduino development environment.

[Download the Arduino Software](#)

[CLOSE](#)

- [BUY AN ARDUINO](#)
- [LEARN ARDUINO](#)
- [DONATE](#)
- [ARDUINO IN THE CLOUD](#)
- [CAREERS](#)



## ARDUINO CLOUD

Develop your code in the cloud and build smart IoT projects!

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☐ ENJOY A COMMUNITY

☐ PROGRAMMING



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## Young Engineers

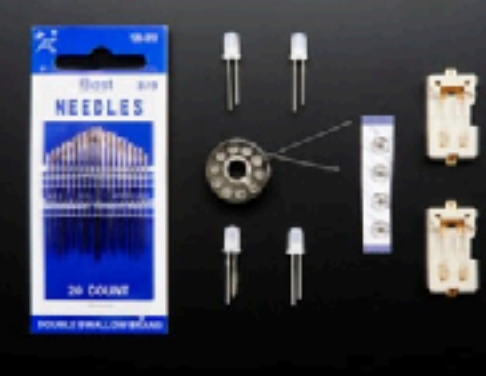
- [Overview](#)
- [Beginner Kits](#)
- [Intermediate Kits](#)
- [Wearables](#)
- [Creative Fun](#)
- [Books & More](#)
- [Crickit - Creative Robotics](#)
- [Learn Guides from the Adafruit Learning System](#)



There's no better way to get your kid started with electronics than the Adafruit Young Engineers category. These kits, packs, and toys all offer introductions into the world of electronics for aspiring engineers.


A number of Adafruit's beginner kits are also perfect for engineers of all ages. We carry kits like the [Drawdio](#) - which turns your pencil into a theremin through conductive tape. Whether you're young, or young at heart, the [Adafruit Young Engineers category](#) is perfect for your all your electronics needs!

## Beginner Kits




Adafruit Beginner LED Sewing Kit  
**\$13.95**

[Add to Cart](#)



TV-B-Gone Kit  
**\$19.50**


[Add to Cart](#)



Circuit Playground Express - Base Kit  
**\$29.95**

[Add to Cart](#)



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### Made By You

Instructables are created by you. No matter who you are, we all have secret skills to share. Come join our community of curious makers, innovators, teachers, and life long learners who love to share what they make.

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### Explore Projects

Circuits >



Planet Locating 'Cosmic Clock' by richstevens1000 in Arduino



AI-driven Interactive Lab Assistant W/ OpenCV & ChatGPT by Kulluhan Aklar in



Pico | Dazzling Desk Display by Mukesh\_Sarkhla in LEDs



DIY Electric Kayak by BradenSunwald in Electronics

UltiMaker Thingiverse


Search Thingiverse

ExploreEducationCreate

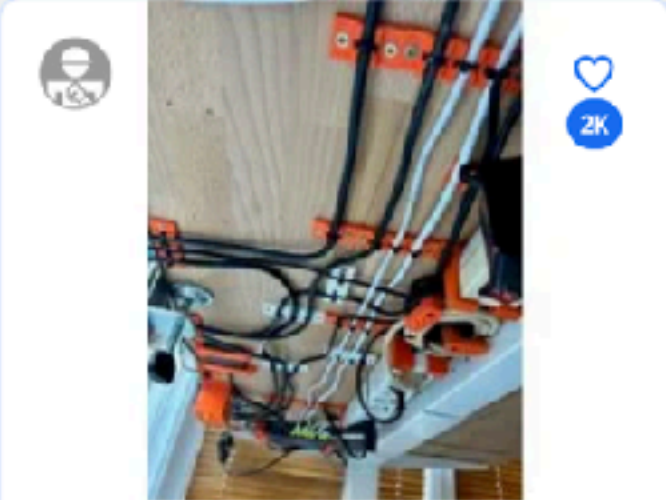
Popular Last 32 Days

All Things

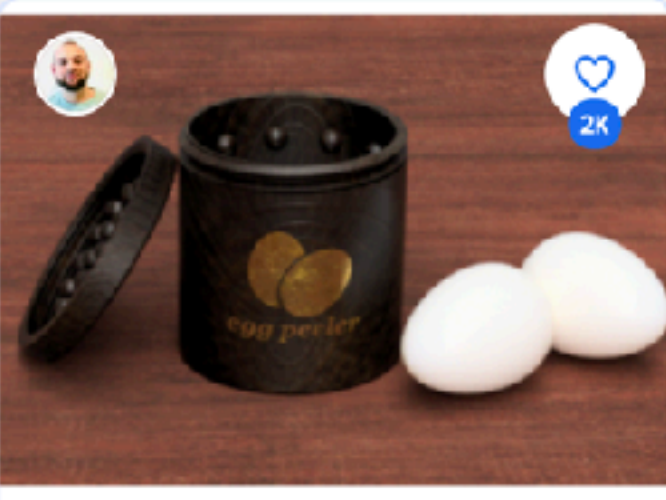
Filter by




6-Shot Disc Shooter




Under Desk Cable Management



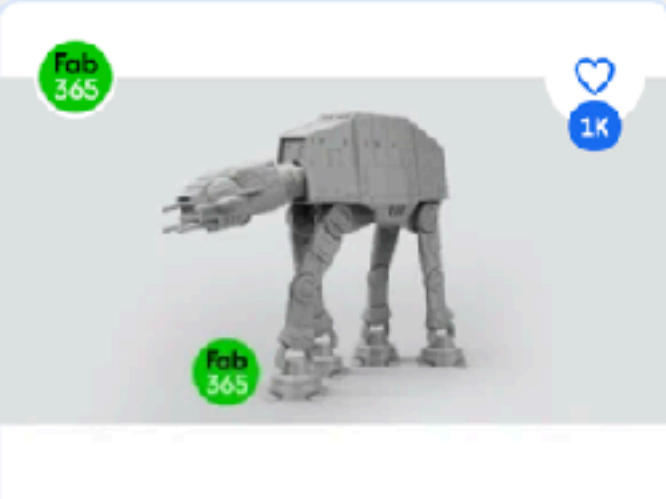
egg peeler



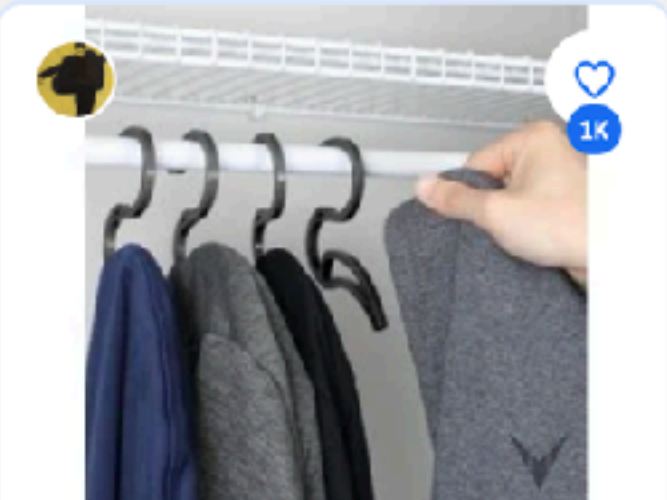
Balance Tetris




Under Desk Drawer



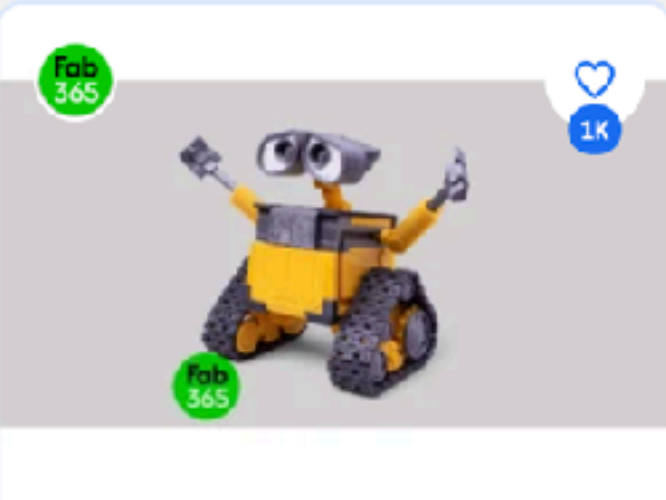
Articulated Starwars ATAT



Venalli Hook



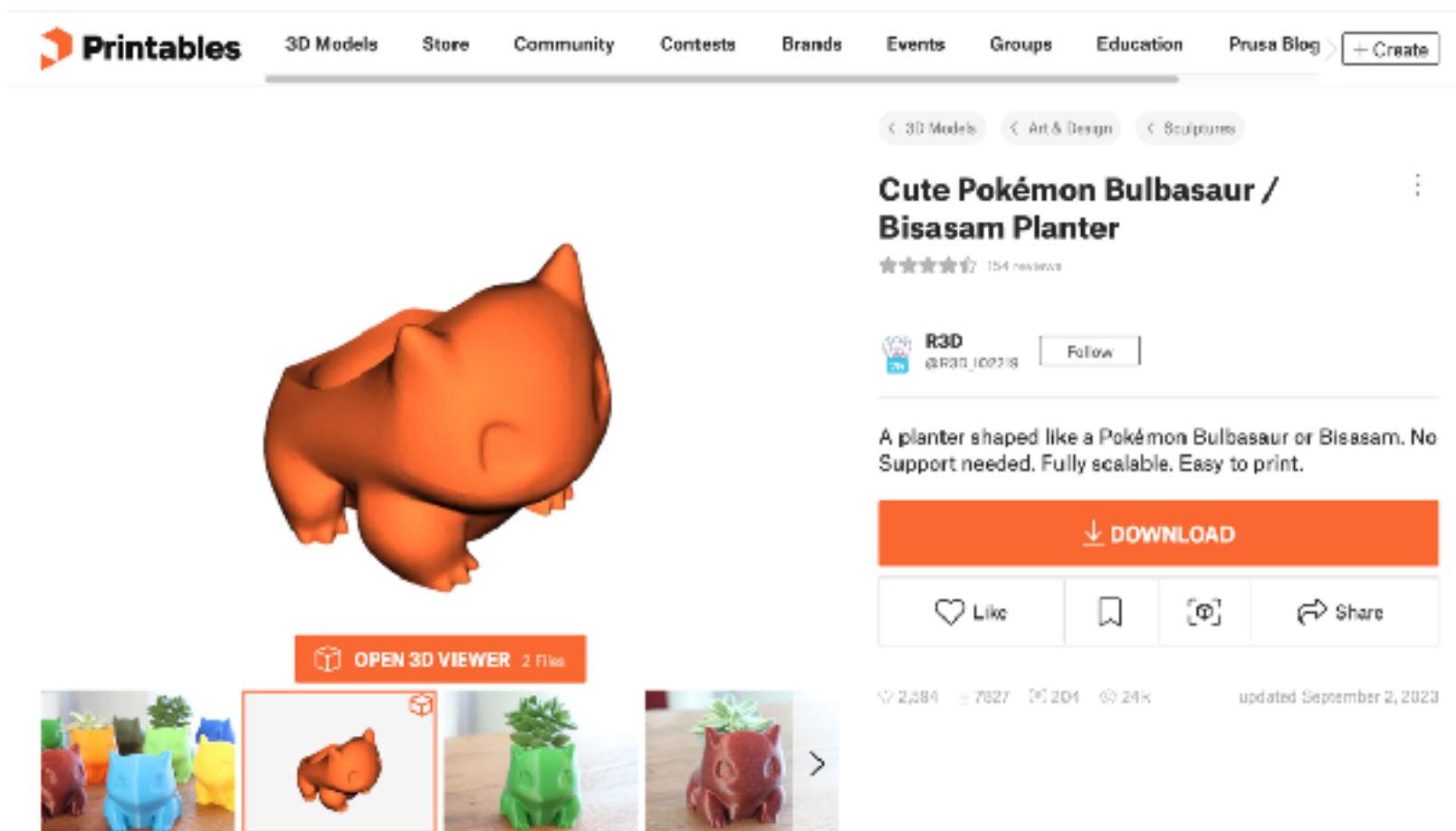
Print In Place Ball Bearings



Wall-E Foldable

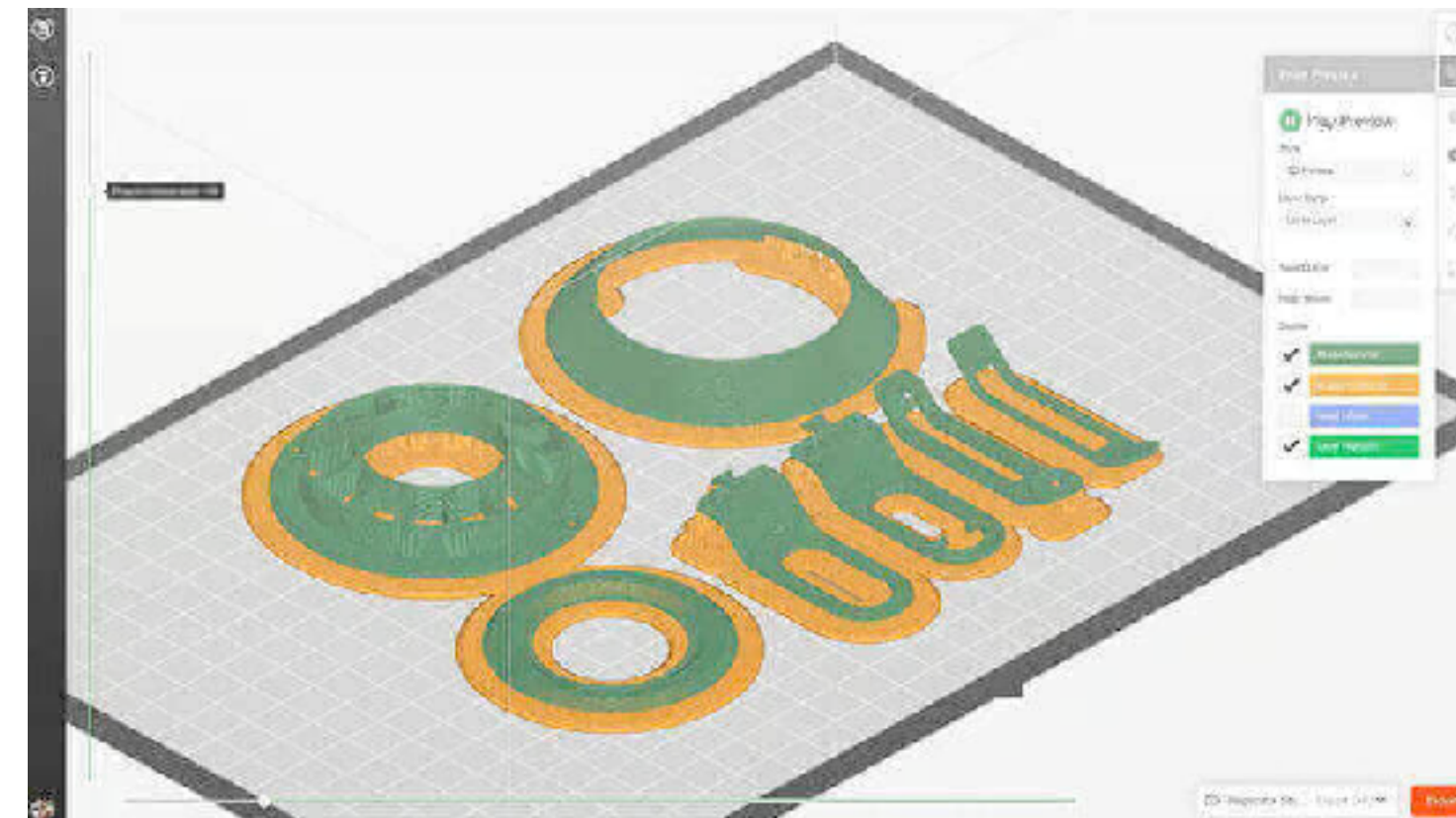


# Digital fabrication: 3D printing



Download (or make)  
software 3D model

**Computer-aided design  
(CAD)**



Load model into slicing  
software that will  
generate machine paths

**Computer-aided  
manufacturing (CAM)**

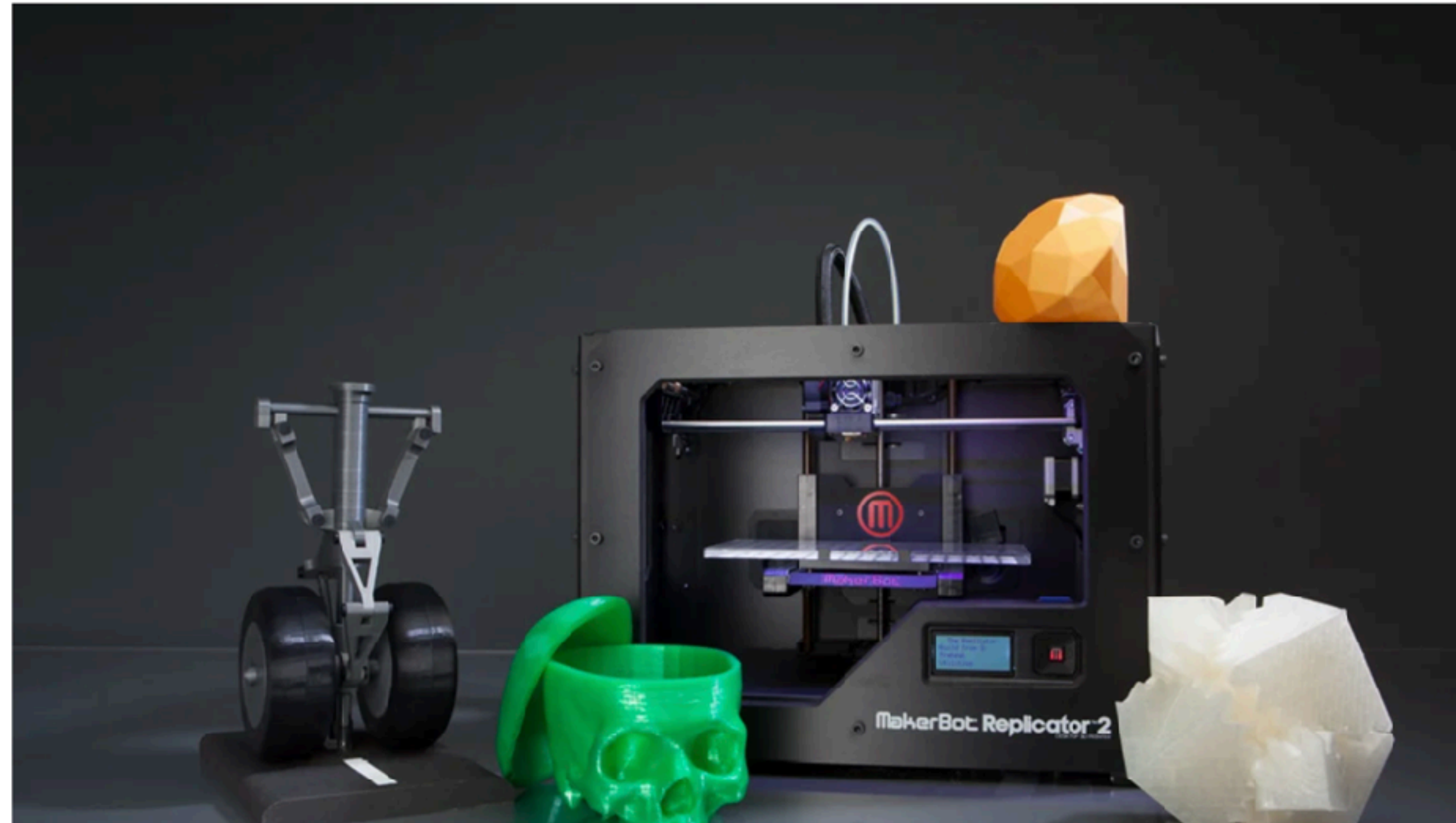


Hit print & wait

# Obama's speech highlights rise of 3-D printing

Doug Gross, CNN

🕒 4 minute read · Published 3:22 PM EST, Wed February 13, 2013



MakerBot

Consumers can own their own 3-D printer for the home, such as this MakerBot Replicator 2.

The burgeoning field of 3-D printing got a big boost Tuesday night when President Obama highlighted it as something that could fuel new high-tech jobs in the United States.

The shout-out in Obama's State of the Union address was perhaps the biggest public endorsement so far of a technology that has its roots in the 1970s, but has recently begun to boom on two fronts – as an increasingly accessible consumer product and

What are some reasons you speculate that, in 2026, every household does not yet have a 3D printer (even though they cost less than laptops now)?



# Criticisms of the maker movement

- Elitist culture

In many ways ‘hackerspace’ is an elitist name for middle-class white guys screwing around with computers and making a big deal out of it. Come on. Every other block in this town has an auto body shop where more hacking takes place than y’all can imagine, and people have their own networks of friends and family and colleagues who learn stuff and create things. Nobody’s writing about that in Wired. That has to set off your bullshit detector a little.

—Liz Henry, “The Rise of Feminist Hackerspaces and How to Make Your Own”

- Not gender inclusive

## Hackerspaces

---

- [Double Union](#) ([wikia](#), [Facebook](#), [Twitter](#)) , San Francisco, CA, USA
- [Mothership HackerMoms](#) ([wikia](#), [Facebook](#), [Twitter](#)), Berkeley, CA, USA
- [Seattle Attic](#) ([wikia](#), [Twitter](#)), Seattle, WA, USA
- [Women's Center for Creative Work](#), Los Angeles, USA (art, tool library)
- [Hacker Gals](#) ([Facebook](#), [Twitter](#)), Kalamazoo, MI, USA (in formation)
- [Spanning Tree](#) ([Twitter](#)), Washington DC, USA (in formation)
- [Le Reset](#) ([Twitter](#)), Paris, France
- [Pechblenda Lab](#) (Catalonia), Spain



# Late 2010s: maker movement crash



News Politics Science Education Housing Immigration Criminal Justice Silicon Valley Forum

NEWS

## Company Behind Popular Maker Faire Closing Down Due to Financial Struggles

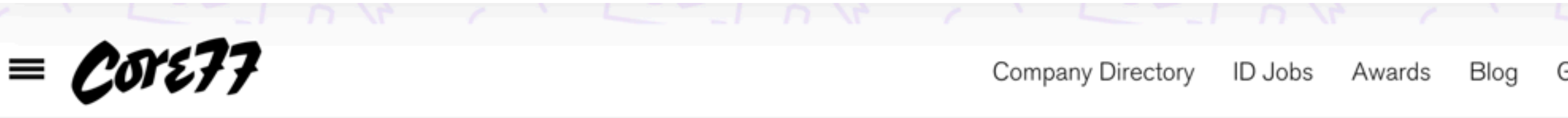
By [Vianey Alderete Contreras](#) Jun 8, 2019 [Save Article](#)

*This article is more than 4 years old.*



A young maker lounges inside a Tinkerdrop trailer in the tiny homes display area of the 2018 Bay Area Maker Faire. (Tara Siler/KQED)

Maker Media, the company behind Make: magazine and Maker Faire, the do-it-yourself science and art family events, is closing down after 15 years.

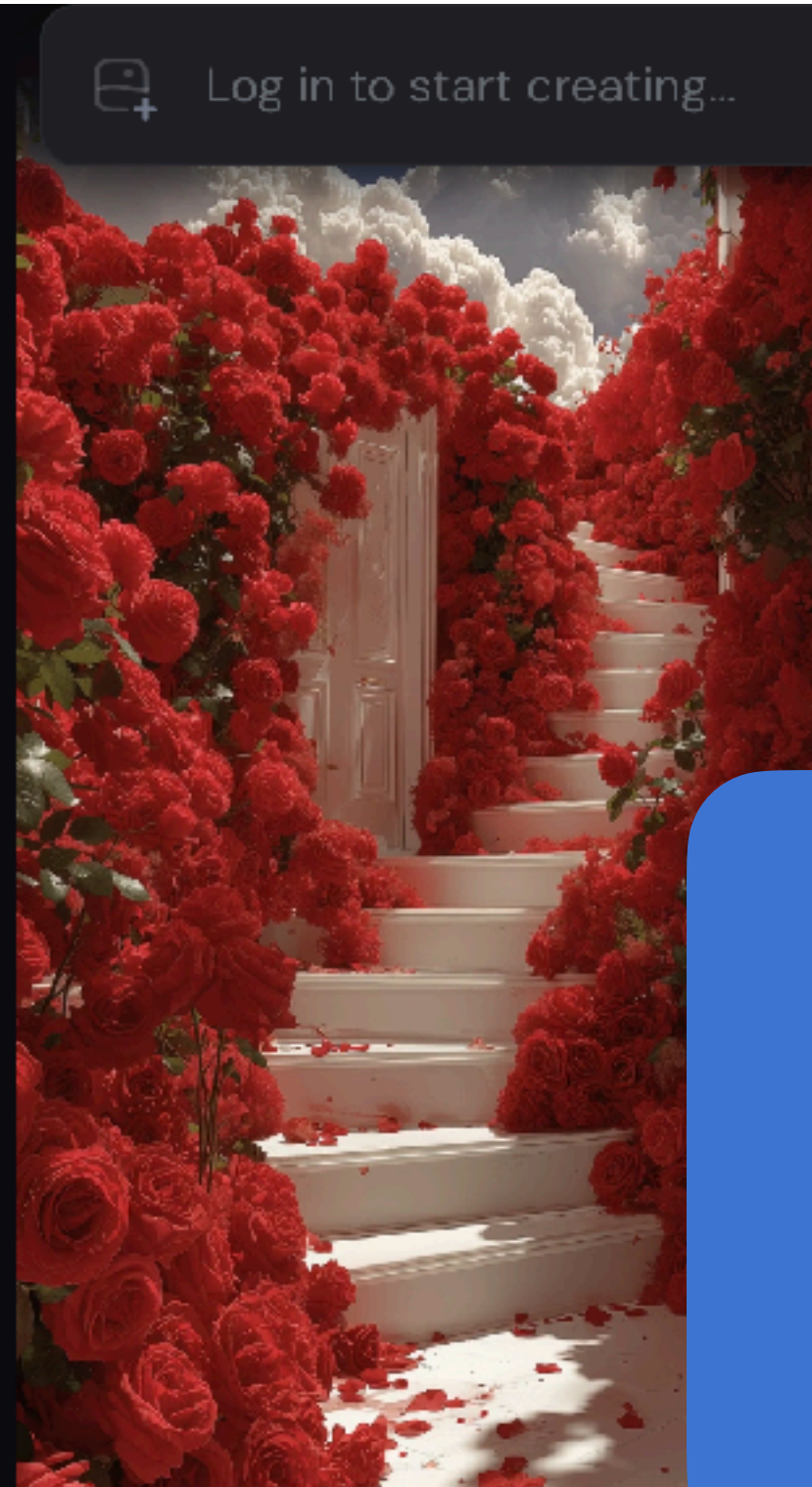


## Why are Makerspaces Dying? Can Designers Bring them Back to Life?

By [Paul Sohi](#) - March 28, 2019 in [Essay](#)

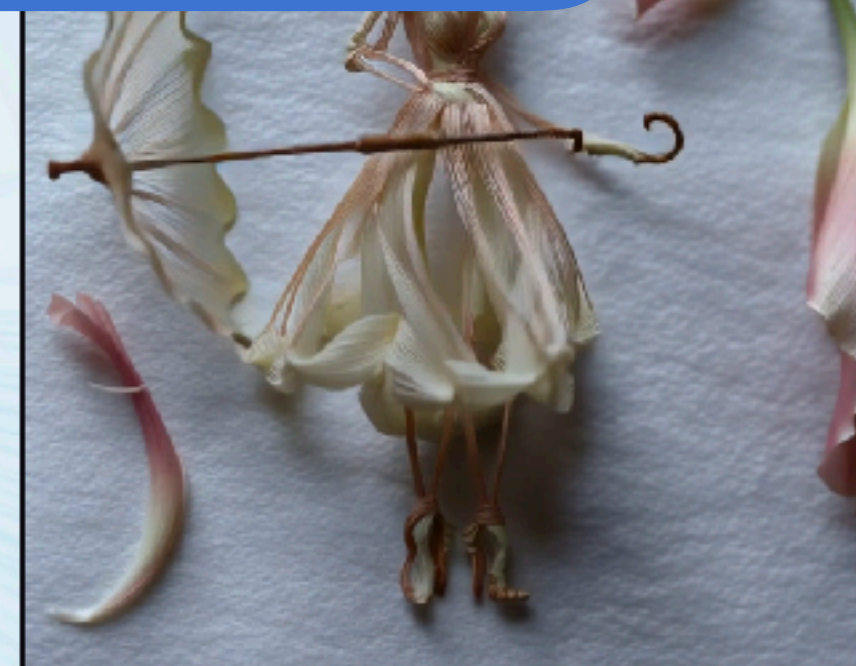


# Instead...2020s: Generative AI craze



The Maker Movement rose and fell over the course of a decade.

Do you think the same will happen with generative AI? What will it look like in 2030?





**Break**



# Course norms

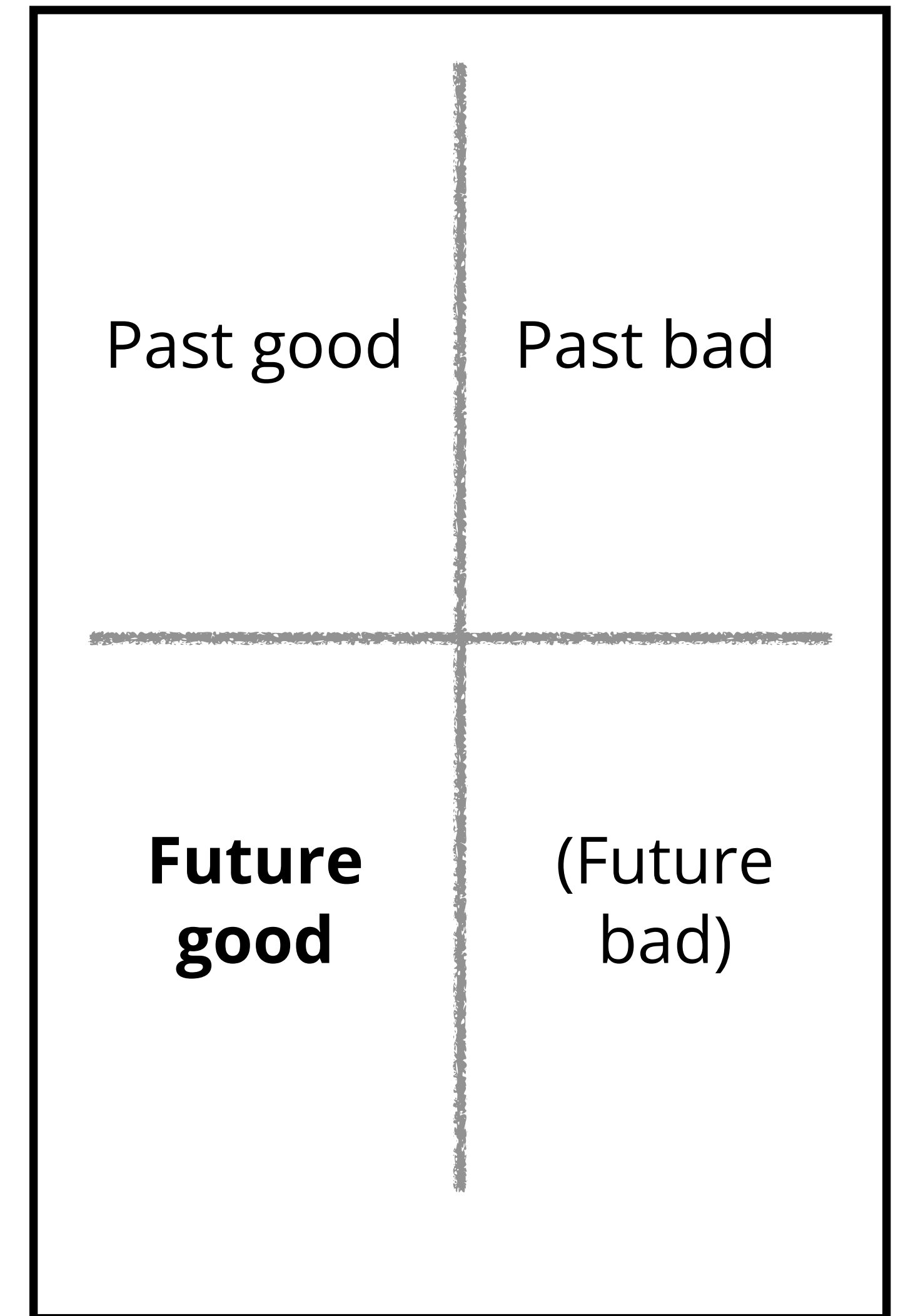






# Collective reflection time on norms (6 min)

- Individually, on post-its (2 min):
  - Write a time you felt good in the classroom
  - Write a time you felt ashamed or discouraged
- With your tables, on the whiteboard (4 min):
  - Place & read group's post-its. Then discuss:
    - Any patterns/trends?
    - Does sharing something personal like a creative project change the degree of vulnerability?
    - What would you like to see in this learning environment ("future good")?





# CS122 course norms

- Course norms to be typed here during class :)

- From Sp 2024:
- DOs:
  - Be respectful of everyone
  - Strive for an inclusive environment
    - Positive feedback
    - Personal relationships
  - Be open minded of people's opinions!
    - Unless they're racist, sexist, etc.
- DON'Ts:
  - Feeling excluded
  - Being cold called
  - Don't interrupt people, don't be condescending, don't dominate the discussion
- From Fa 2024:
- Dos:
  - It's OK to be wrong! No bad or stupid questions. It's good to ask questions!
  - Constructive, actionable criticism; don't shut down others completely or be rude
  - Mindfulness, active listening
  - Acknowledge each other's efforts
  - Collaboration!



# Seminar



# Making or Making Do?

- “**Making do**: using the materials and competencies on hand to create objects or processes that aid in everyday life, with creativity and innovation countering precarity and marginalization”
- The origins of hacking & making follow Western notions of individual liberty, innovation in defiance of authority and searching for utopia - like the cowboy 🤠 (think: American dream, pull yourself up by your bootstraps, etc.)
- Making (do) does not have to be Western, does not have to be individualized, and does not have to have middle-class values
- Offers a **more expansive definition** of making as making do: “Beyond their heroic narratives of empowerment and self-realization, making and hacking can express other and more ambivalent projects, ranging from **assertion of local needs and values** to situated forms of coping with the displacements of a neoliberal world.”






nu

←

BSTI Rd

Dhaka, Dhaka Division

 Google Street View

Mar 2013    See latest date

**Begunbari neighborhood  
of Dhaka, Bangladesh**



 AO Edited

# Treasure Hill

Taipei City, Taiwan

This densely-packed cluster of buildings was saved from the wrecking ball and turned into an art community.



BEEN  
HERE?

39







- Focused on translating code to English and evangelizing open source software values rather than contributing software
- Felt left out of the global stage and unrecognized





- Larger concerns, like material conditions of life
- Emphasis not on coding but on learning English (e.g., to type “print”)
- Winners of a hacking competition came from a highly resourced private school



# Activity

- Making was defined by US consumer markets (e.g., Make magazine, Adafruit) and focuses on a **finished result**.
- "Making do" is **never complete**: includes repair and repurposing.
- "By 'making do' we do not mean a world set apart, but an **alternative configuration** that accompanies other forms of production and exchange."
- What would this alternative configuration look like? What would be your utopia of "making do?"
  - What would a world where making is not commoditized or mythologized look like? Making that aligns with your core values? What's your ideal making context? For what community are you making? How will you repair and repurpose what you make?
  - *Activity*: Sketch out your vision with markers on the printer paper. (5 minutes)
  - *Bonus*: Think about how a tool you would want to build might support this future.



# AI art & its impact on artists


- Image generators are not artists since art is a uniquely human endeavor connected to **culture** and experience
- Aesthetic versus art: generated images can be appreciated because they look nice, but because they merely imitate the *technical* process in the training data, they lack cultural goals, understanding, communication






# Goals of humans using image generators often commercial, not cultural


Results



Dinosaur AI Coloring Book: Dinosaur AI Generated Coloring Book for ages 11 and up (AI generated coloring books for all ages and skill levels)  
Related to: AI generated coloring books for all ages and skill levels | by Nathan Reed Truesdell | Jun 13, 2023  
★★★★☆ ~ 1  
Paperback  
Ages: 11 years and up  
\$9.99  
Prime  
FREE delivery Tue, Jan 23 on \$35 of items  
shipped by Amazon  
Or fastest: delivery Sat, Jan 20




A.I.magination: A Children's Book of Imagination - AI generated art  
by E. Larson | Dec 24, 2022  
★★★★☆ ~ 2  
Paperback  
\$12.20  
Prime  
FREE delivery Tue, Jan 23 on \$35 of items  
shipped by Amazon  
Or fastest: delivery Sat, Jan 20




Chickens on the Farm (AI Generated Children's books)  
Part of: AI Generated Children's books (1 books) | by Neeran Gul | Jul 11, 2023  
Kindle  
\$6.00  
Available instantly  
Paperback  
\$8.00  
Prime  
FREE delivery Tue, Jan 23 on \$35 of items  
shipped by Amazon  
Or fastest: delivery Sat, Jan 20

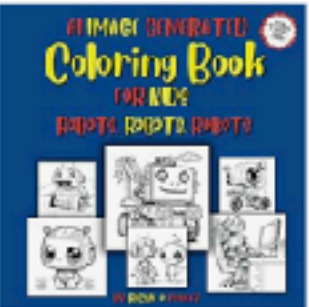
More results



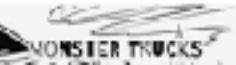
ai generated picture book : AI art that I have generated by using my own art style that was added in the art generator  
by Roy Boiling II | Nov 19, 2023  
★★★★☆ ~ 1  
Kindle Edition  
Ages: 5 years and up  
\$0.00 Unlimited  
Free with Kindle Unlimited membership Join Now  
Available instantly  
Or \$3.99 to buy



Fighting Machines AI Coloring Book: Fighting Machines AI Generated Coloring Book for ages 12 and up (AI generated coloring books for all ages and skill levels)  
Related to: AI generated coloring books for all ages and skill levels | by Nathan Reed Truesdell | Jun 23, 2023  
Paperback  
Ages: 12 years and up  
\$9.99  
Prime  
FREE delivery Tue, Jan 23 on \$35 of items  
shipped by Amazon  
Or fastest: delivery Sat, Jan 20



AI Image Generated Coloring Book For Kids: Robots, Robots, Robots  
by Rickie O. Pauley | Dec 28, 2022  
★★★★☆ ~ 3  
Paperback  
Ages: 6 - 12 years  
\$9.95  
Prime  
FREE delivery Tue, Jan 23 on \$35 of items  
shipped by Amazon  
Or fastest: delivery Sat, Jan 20



Monster Trucks Colouring Book AI Generated with Midjourney  
by Kirsten A. Gehlbach | Jan 4, 2024

≡

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Q

Netflix Made an Anime Using AI Due to a 'Labor Shortage,' and Fans Are Pissed

A new short film called 'The Dog & The Boy' uses AI-generated art for its backgrounds.



By Samantha Cole

February 1, 2023, 8:15am

f

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Tweet

S

Snap

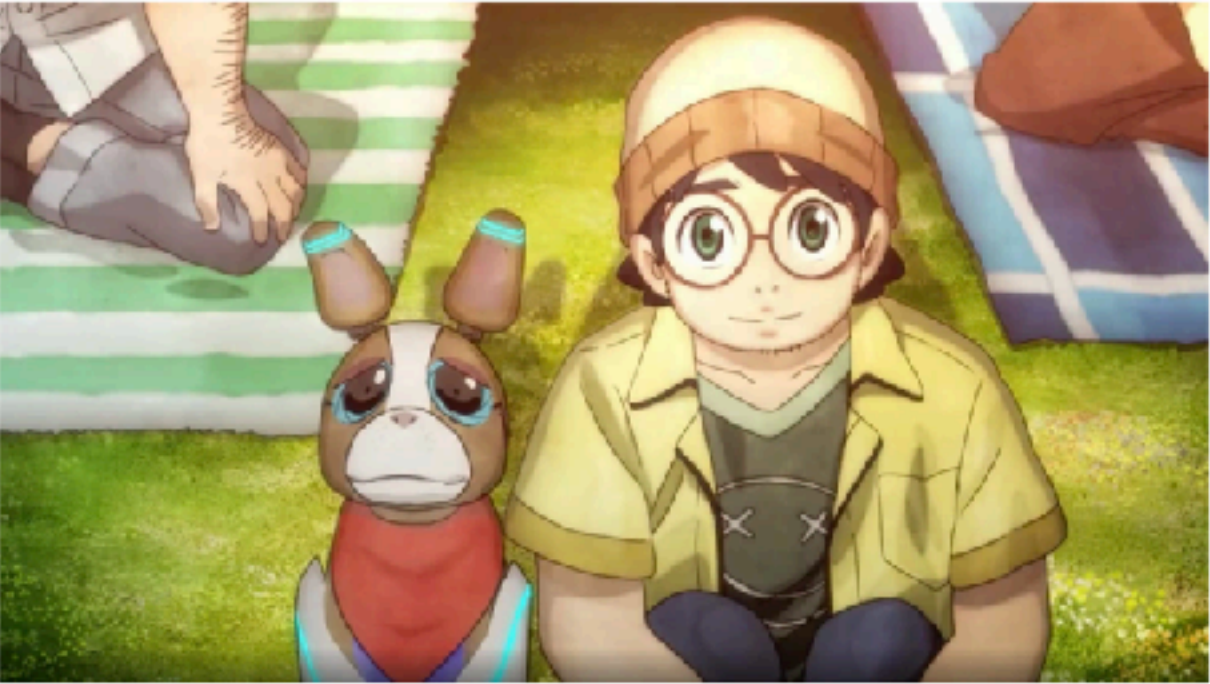


IMAGE VIA NETFLIX

dystopian manga for a

“Contrary to ‘democratizing art,’ this reduces the number of artists who can share their works and receive recognition.”



# Impact on artists & suggestions for researchers

- When we think image generators have agency, it (1) diminishes the complexity of human creativity, (2) steals credit and \$ from artists, (3) gives organizations behind image generations less accountability
- What can we do?
  - Not just individual burdens, need structural protections
  - Policy development: metric of degree of human interaction (at least 25% human to be copyrighted)

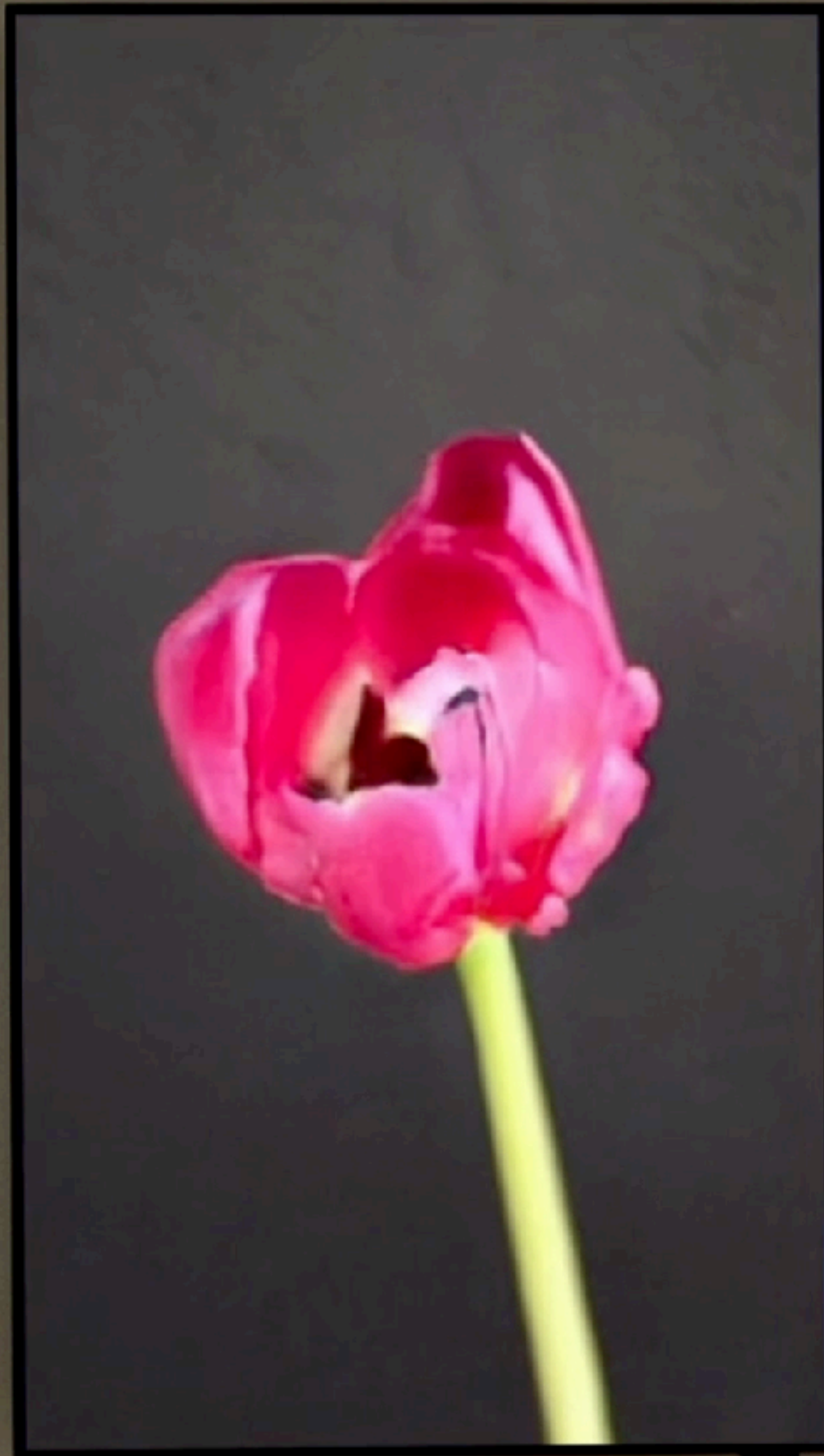
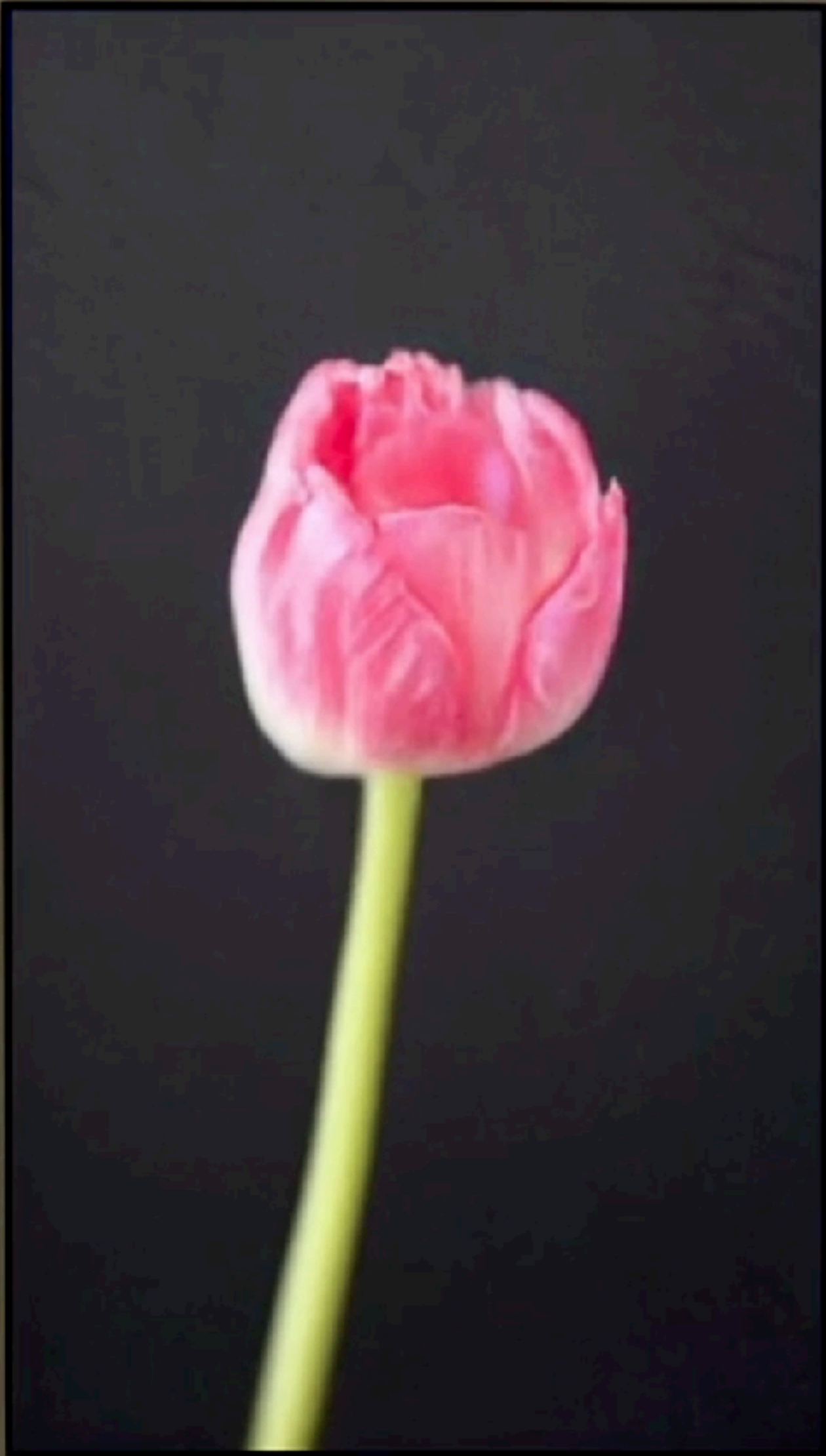


Original



Glazed





Mosaic Virus by Anna Ridler



# What about a tooling perspective?

- Image generators are largely text to image: this is not how humans are used to creating images (i.e., by drawing and sketching)
- If we do use image generators as *tools* in our artistic practices, what are ways we can add more human agency and control?
  - ControlNet demo: <https://stablediffusionweb.com/ControlNet#demo>
- Turn to the person next to you: If you didn't have any technical limitations, how would you change image generators so they are better tools?



# Meta seminar notes

- You can summarize each reading individually or together
- Your activities can also be per reading or together
- The seminar should ideally synthesize the readings and/or relate them to tooling and bring in examples (from the reading or the real world)
- Activities can involve demos, discussions, making something, theater—anything you want!
- If you upload your slides before class and DM me on Slack, I'm happy to give feedback so you can iterate, or even meet in person before class time



# Class 2 recap

- TODOs:
  - By **Wednesday's** class:
    - PM1 - Hacking Zine - remember to bring to class!
    - Zipcrit by Jack C