

PHILOSOPHY OF COMPUTING | SPRING 2025

UNITS OF MEASUREMENT

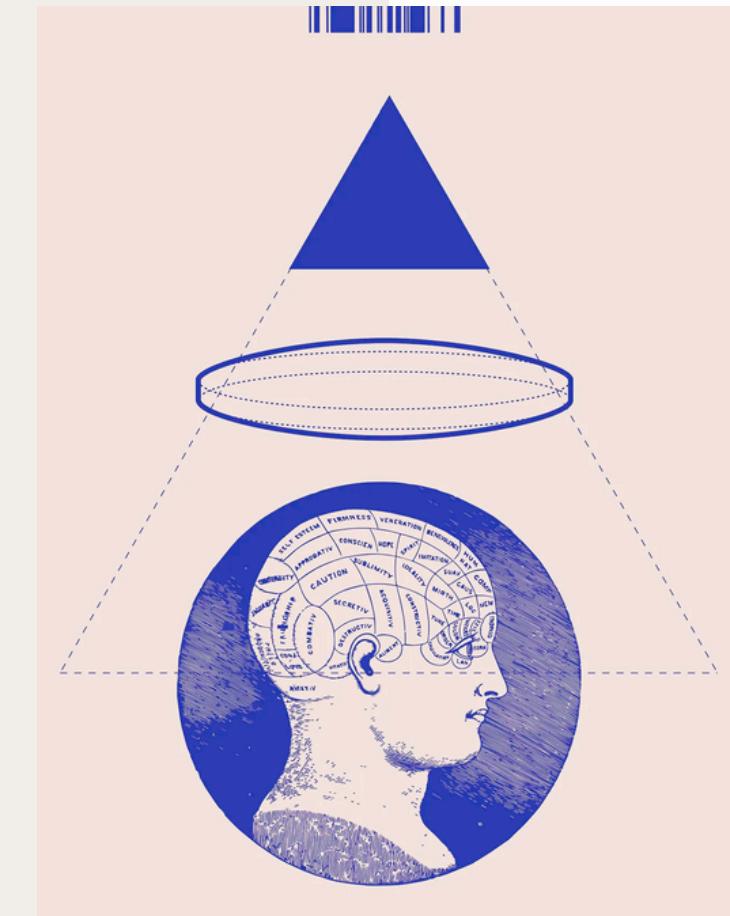
PORTFOLIO PIECE 2

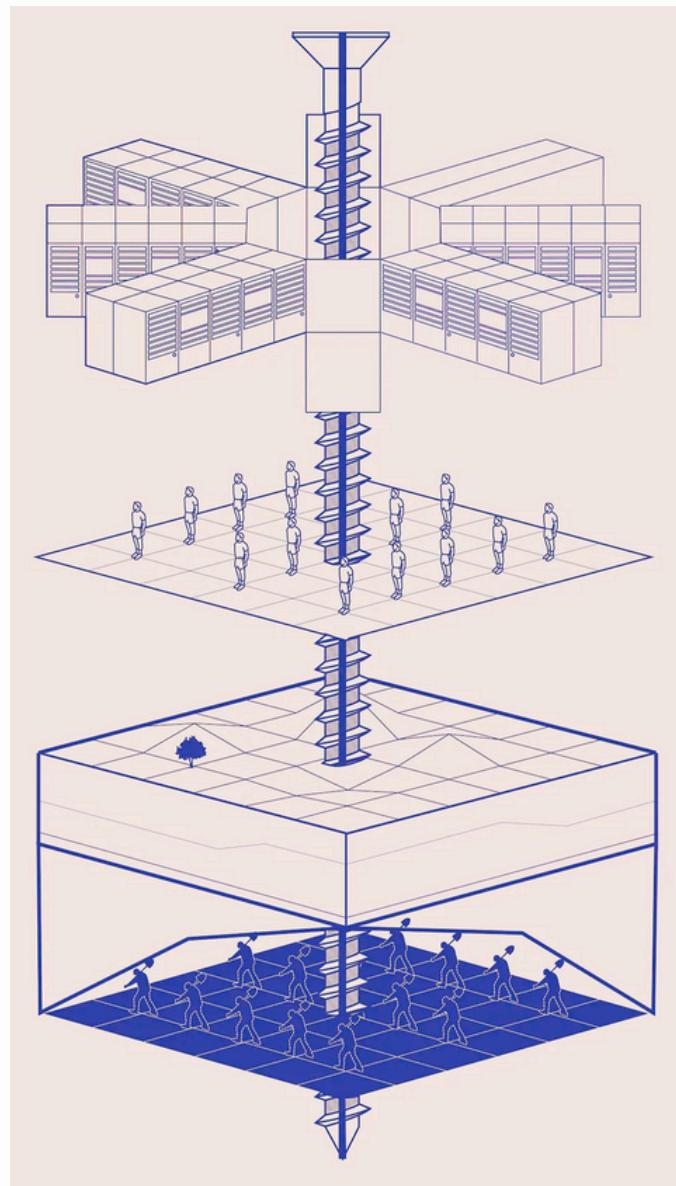
YUK YI WONG

P R E F A C E

Units of Measurement builds on Crawford's *Atlas of AI* to reimagine the brand logos of four familiar names in Big Tech: Apple, Amazon, Tesla and OpenAI. Crawford explored AI development and impact by focusing on breadth: she identified links across a range of systems, using experiences from daily life as context. In a similar vein, the redesigned logos make use of visual art to express the nuance of supply chains. Beyond this, the series focuses on the urban consumer, exploring the impact of marketing on the conceptualization of use—and prospective uses—of current technologies.

As consumers, we receive our devices only after they have gone through every level of refinement. Raw materials aren't typically the first thoughts that come to mind. This series offers a walk through of the realities we unconsciously miss in each use of an Apple device, each placement of an Amazon delivery, each query to ChatGPT and each time we spot a Cybertruck and try to wrap our minds around it.





Tools used

Adobe Photoshop, Adobe Illustrator

Main source

Atlas of AI by Kate Crawford



0 1
→



“...IT WAS KIND OF ICONIC ABOUT
TAKING A BITE OUT OF AN APPLE.
SOMETHING THAT EVERYONE CAN
EXPERIENCE. IT GOES ACROSS
CULTURES.”

Rob Janoff
Designer of the Apple logo



A P P L E

Apple's branding centres on being minimalist, stylish and accessible. Today, many of us can identify it with one look at its logo—it's simple and straightforward.

Here, a bigger piece of the apple has been taken out. Jagged and declining, a tunnel stretches across to represent a mining site for one popular conflict mineral: gold, located in significantly small amounts at the very bottom.

The wall texture resembles that of an apple's core. For this particular apple, its core is rooted in the metals mined deep underground in obscurity. The mine was drawn using a real photograph. It contrasts the logo's two-dimensional, lightweight impression to indicate real and tangible consequences of extraction.

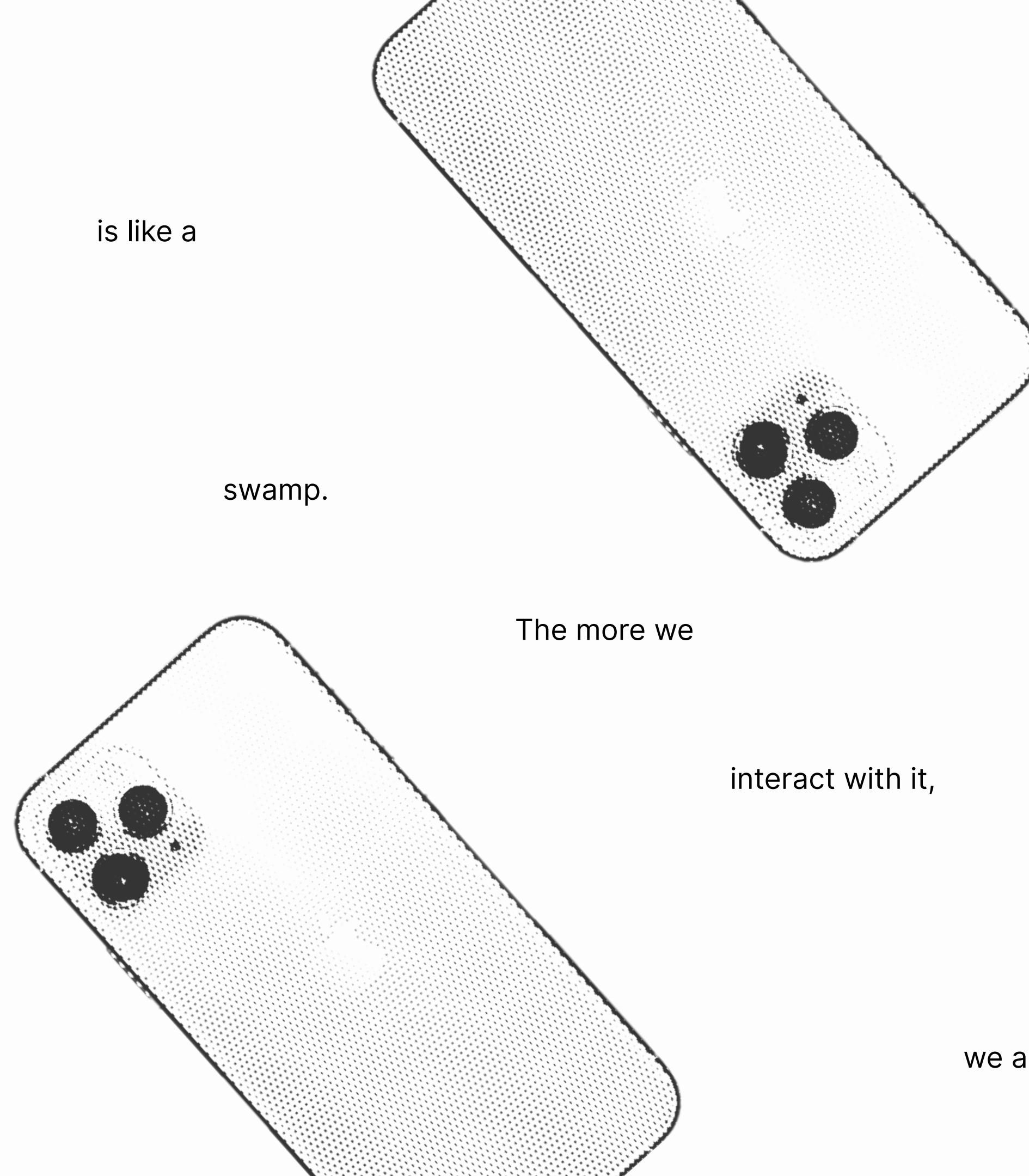
APPLE



Gold is malleable, ductile and excellent at conducting electricity, making it a valued component for electronic devices. Yet, a great amount of labour and mining can only yield small amounts of it.



Light enters the mine entrance. However, it quickly dissipates further down the tunnel. This illustrates the muddy and controversial ethics behind the mining operations of many tech companies.



is like a

"The Apple ecosystem

swamp.

The more we

interact with it,

the deeper

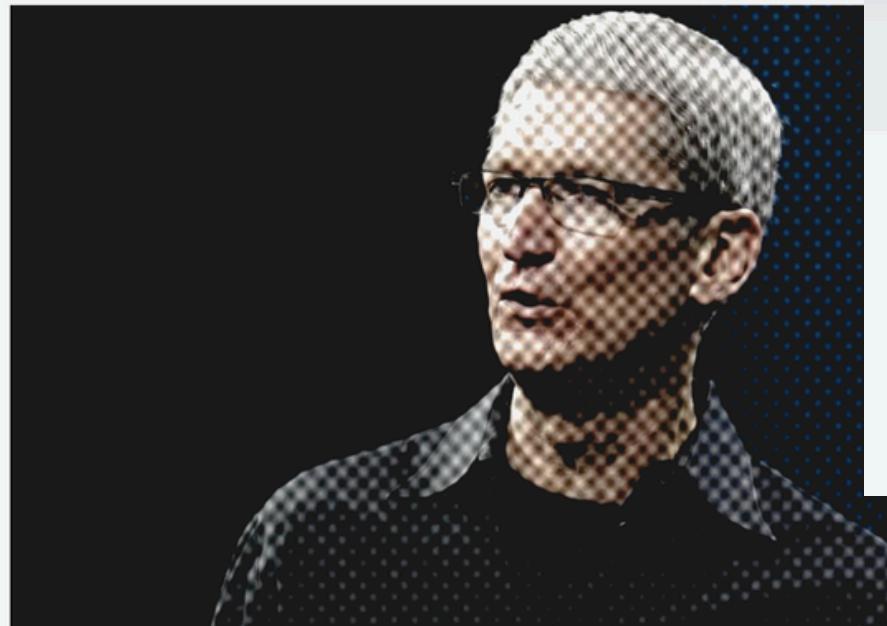
we are drawn into it."

Apple 'deeply offended' by BBC documentary on its suppliers exploiting children

Cecilia Jamasmie | December 19, 2014 | 3:00 pm Base Metals Precious Metals Africa Asia China Europe Copper Diamond Gold Silver



Video Live Shows ▾



Cook in January 2009 after the Macworld Expo, via [WikiMedia Commons](#).

US court absolves top tech companies in Congo's child labor case

The tech giants were found not liable for forced labor in Congo's cobalt mines.

By [Emma Ongao](#)
March 6, 2024, 9:10 AM



Cook in January 2009 after the Macworld Expo, via [WikiMedia Commons](#).

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UNCATEGORIZED

The Dark Origins of the Gold in Your Smartphone

Illegal and exploitative mines in Colombia provide tons of the precious metal to unknowing companies.

By Jamie Condliffe

November 16, 2016

Your smartphone contains about one dollar's worth of gold, buried in its circuitry. Not a lot. But it could have been bought from an illegal and exploitative mining operation in Colombia.

Gold is one of the major conflict resources, along with tin, tungsten, and

NORTH OF 60
MINING NEWS
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Apple wants Alaska placer gold for iPads

Tech giant working with miners reclaiming gold rush streams North of 60 Mining News – August 16, 2019

Share Lasley, Mining News | Last updated Sep 26, 2020 5:24am 0

Since RESOLVE first introduced the Salmon Gold partnership in 2017, the organization is connecting local placer miners, environmental groups and government agencies in order to rehabilitate streams historically mined in Alaska, B.C. and the Yukon.

"Salmon Gold is like a peace treaty between mining and salmon habitat," said RESOLVE CEO Stephen D'Esposito. "It's a place where all sectors can work together – the restoration community, First Nations and the mining industry."

Apple, which uses small amounts of gold in electronic components throughout its line of high-tech products, and global luxury jewe

TECH

How conflict minerals make it into our phones

PUBLISHED WED, FEB 15 2023 8:00 AM EST

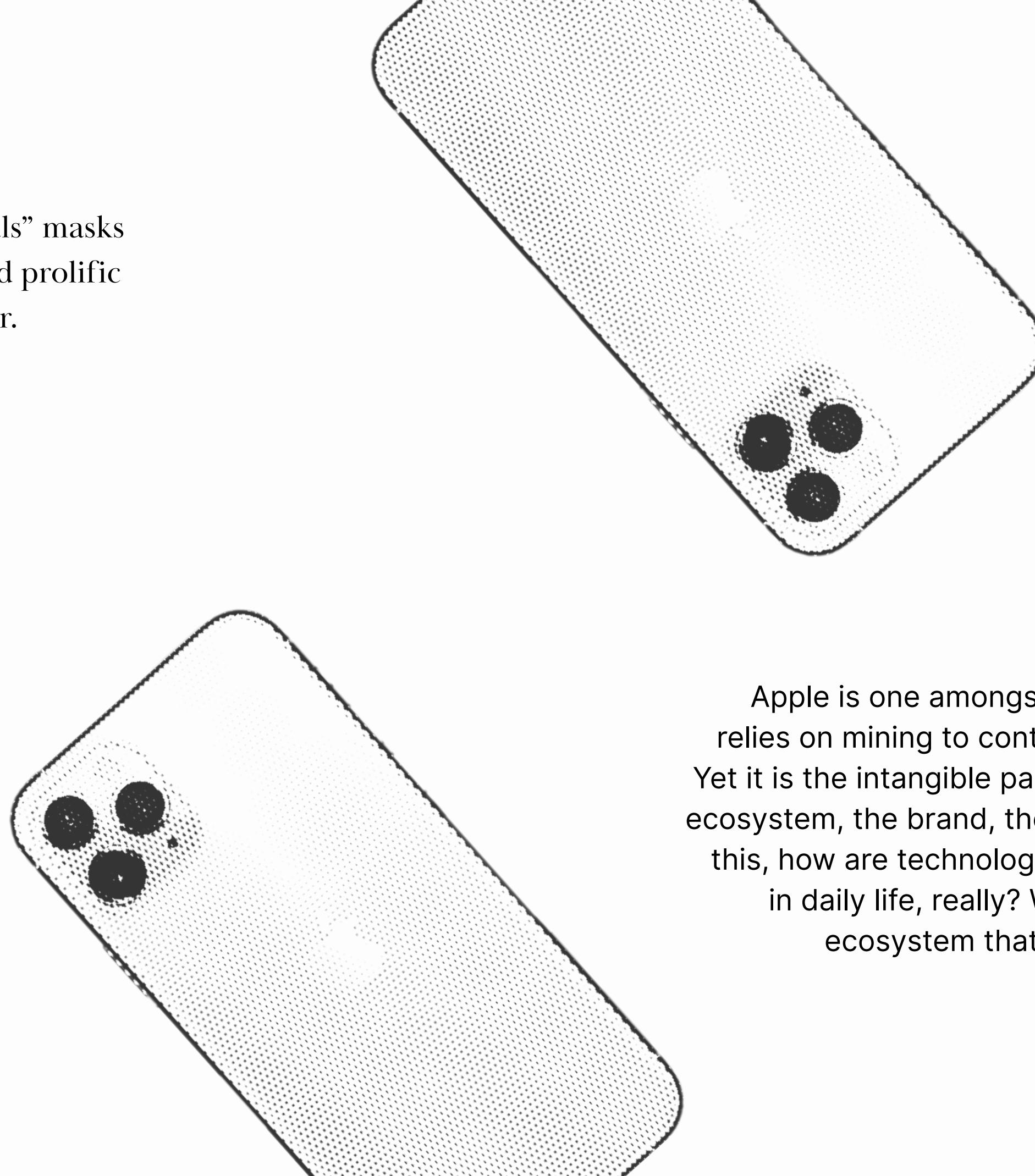


Katie Brigham
@KATIE_BRIGHAM

That's largely because in the DRC and surrounding countries, hundreds of thousands of people work in the informal mining sector, toiling away using hand tools in what are known as artisanal and small-scale mines. This type of mining can be hazardous and difficult to regulate, but it's also one of the few sources of income available to some of the world's poorest men and women.

So while companies like [Apple](#), [Microsoft](#), [Intel](#) and [Tesla](#) put out extensive reports on conflict minerals every year, usually stating that there is no reason to believe the minerals they source help to support armed groups, corruption and instability at mine sites means there are no guarantees.

Camp Service
Discover Who's
Landmen, Mi



The term “conflict minerals” masks the profound suffering and prolific killing in the mining sector.

– Crawford, *Atlas of AI*

Apple is one amongst numerous tech companies that relies on mining to continue manufacturing its products. Yet it is the intangible parts that sell and stick—the Apple ecosystem, the brand, the digital experience. Considering this, how are technological advancements being framed in daily life, really? What does it mean to buy into an ecosystem that is built upon countless others?



0 2
→

A horizontal arrow pointing from left to right, with the number "0 2" positioned above it.

"THIS WAS DISTINCTIVE, WORKED AT ANY SCALE, AND GAVE A HUMAN FACE TO A CORPORATE GIANT... THE SMILE OF THE ARROW COULD SHOW, QUITE LITERALLY, THAT THEY SOLD EVERYTHING FROM A TO Z."

Turner Duckworth

Design agency behind the Amazon logo

AMAZON



At the Amazon fulfillment center, Crawford observes how human labor is organized by Time Clocks, Kiva robots and nonstop conveyer belts. The workers are treated as disposable and invisible resources, despite being the assets connecting machinery to business and powering the Mechanical Turk.

In the logo, people line the sides of alternative letters—they are cut outs of figurines from an image, edited to show a white silhouette. Lined up and situated in darkness, the design gives visibility to the repetitive, strenuous and voiceless work of crowdsourced workers and Amazon employees.

Imagine seeing this logo on Amazon's delivery website instead. What questions might be raised?

AMAZON



The arrow, which signifies selling everything from A to Z, also now points to a line of workers, who are constantly surveilled and tracked on the job. Autonomy, dignity and privacy have been sold to the corporate giant and its automations.

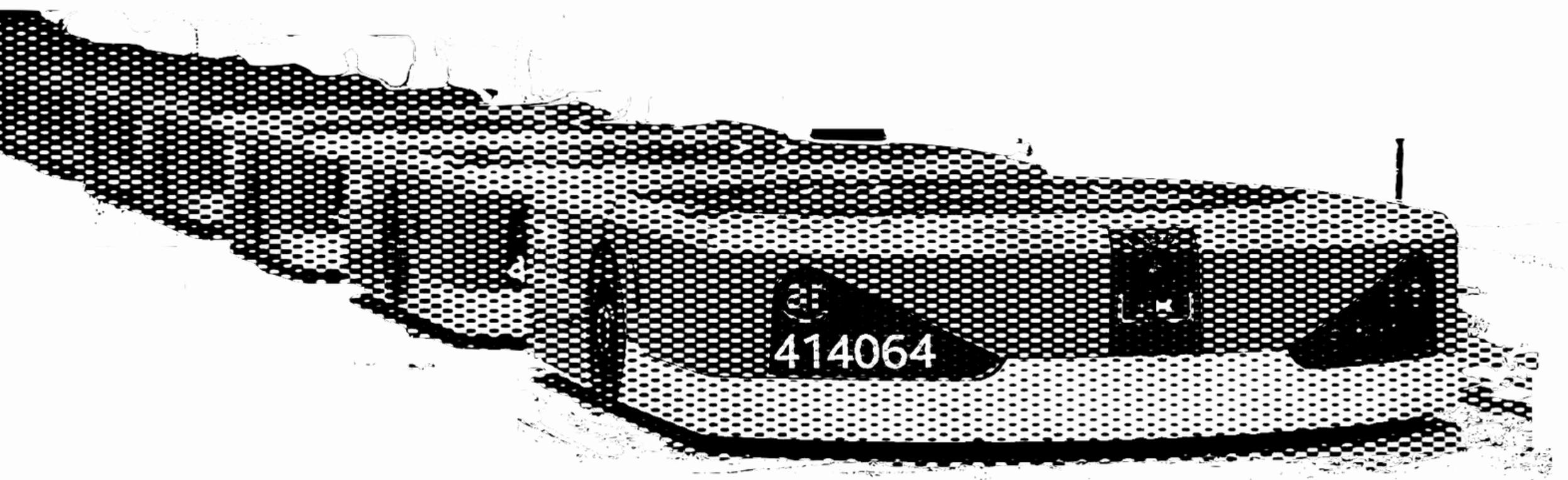


The workers were placed upside-down on alternative letters to reflect labor that is around the clock. Each group of workers face the same direction, following the company's stringent requirements for work.



This shuffling army of ground-hugging robots presents a kind of effortless efficiency: they carry, they rotate, they advance, they repeat.

– Crawford, *Atlas of AI*



Humans are the necessary connective tissue...
But they aren't the most valuable or trusted
component of Amazon's machine.
– Crawford, *Atlas of AI*



Amazon loses bid to block NLRB case over NYC union bargaining

May 7, 2025, 12:30 GMT-4 · Refinitiv · 2 min read

BUSINESS DAY

Inside Amazon: Wrestling Big Ideas in a Bruising Workplace

The company is conducting an experiment in how far it can push white-collar workers to get them to achieve its ever-expanding ambitions.

AMZN +0.51%

By JODI KANTOR and DAVID STREITFELD AUG. 15, 2015

A divided U.S. appeals court has rejected Amazon.com's attempt to block a National Labor Relations Board case involving the online retail giant while it pursues claims that the agency's structure is unconstitutional.

THE AMERICAN PROSPECT
IDEAS, POLITICS & POWER

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Amazon Uses Arsenal of AI Weapons Against Workers

A study of a union election at an Amazon warehouse in Bessemer, Alabama, shows that the company weaponizes its algorithmic surveillance tools to prevent organizing.

BY DANIEL BOGUSLAW MARCH 13, 2025

12.1k Shares

NBC NEWS

Fired, interrogated, disciplined: Amazon warehouse organizers allege year of retaliation

BUSINESS NEWS

Fired, interrogated, disciplined: Amazon warehouse organizers allege year of retaliation

The number of charges filed with the National Labor Relations Board accusing Amazon of interfering with workers' right to organize more than tripled during the pandemic.

Amazon has shown that companies do not need a true 'human face' to be successful. Automation in the workforce provides the means for further control of labor. Going further, the case of Amazon's labour practices interrogates the power of machines to enforce and reframe power dynamics.



TESLA

03
→



TESLA

“INNOVATIVE AND INTELLIGENT:
THAT’S TESLA’S LOGO. AND IT’S
EXACTLY WHAT THE TESLA BRAND
AIMS TO BE.”

Craig Bloem
Inc.

TESLA



Tesla's logo was created by extracting a T-shaped portion from the cross-section of an electric motor. Here, the tip of the logo has been redrawn as a drill, while its top arc has been rendered metallic and silver. Tesla, known for its electric vehicles, consumes the most lithium-ion batteries in the world. Below this text is an alternative design that makes the entire logo metallic.

There are a few ways to extract lithium, the most common being drilling deep underground to find liquid brine reservoirs. The brine is brought to the surface to evaporate; subsequent rounds of refinement yield usable lithium.

The drill was drawn in accordance with the logo's sleek, vibrant vector style. In contrast, the metal bar above, representing mined lithium, adds physical weight to the logo.



TESLA



The drill, which was drawn freehand with smoothing in Illustrator.



The metallic bar is lithium. It crowns the T-shaped drill, indicating its status as a key metal that drives Tesla's mining operations. It is a physical reminder of where rechargeable batteries originate from—the earth.



0 4



“AT ITS HEART, THE LOGO CAPTURES
THE DYNAMIC INTERSECTION
BETWEEN HUMANITY AND
TECHNOLOGY—TWO FORCES THAT
SHAPE OUR WORLD AND INSPIRE OUR
WORK.”

OpenAI
Design Guidelines website



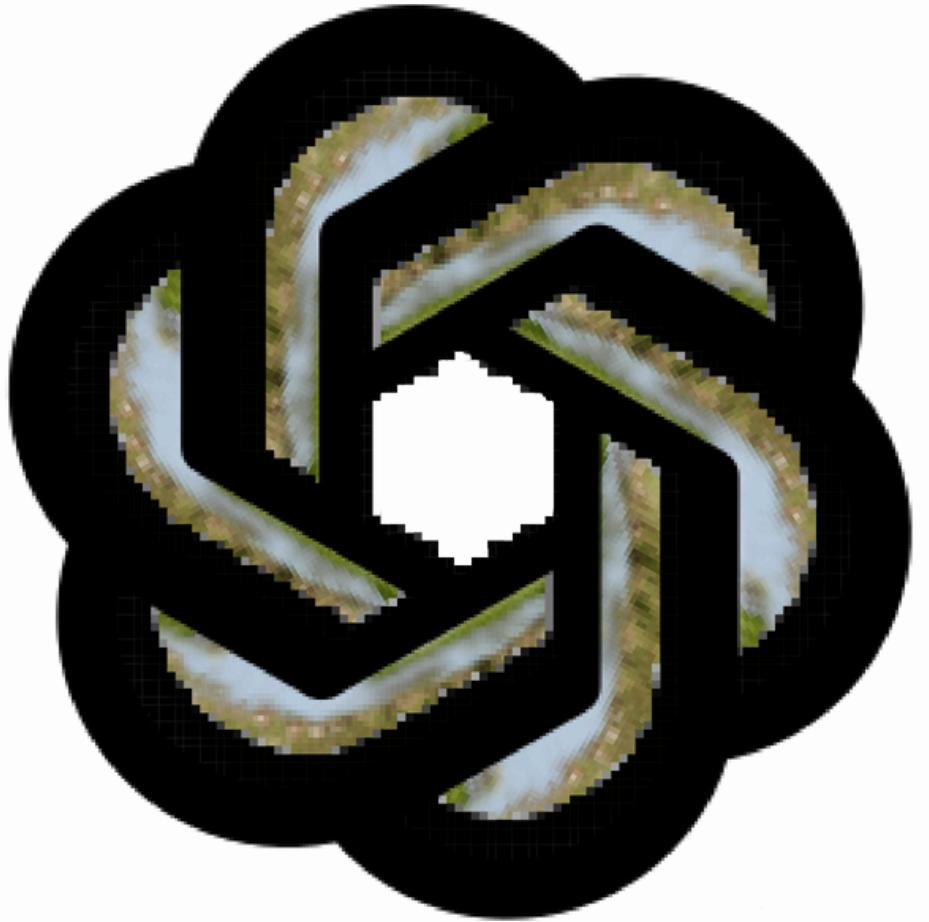
OPENAI

The redesigned OpenAI logo transforms the company's familiar blossom through a pixelated render of a riverbank. This redesign showcases the raw resource demands needed to power artificial intelligence development.

The water in the logo's petals represents the intensive water consumption required to cool data centers—critical infrastructure for OpenAI's computational processes. The pixels embody both the countless data points harvested to train large language models and the reliance on what is novel and online.

The blossom was deliberately left empty to speak to the paradoxical nature of AI development—tangible resources like water, electricity, and human labor are continuously consumed to sustain what appears to users as an ethereal, cloud-based technology. This void questions what is truly at the core of AI systems when their material foundations are made visible.

A monochromatic logo was created as an alternative logo that adheres more closely to OpenAI's branding.

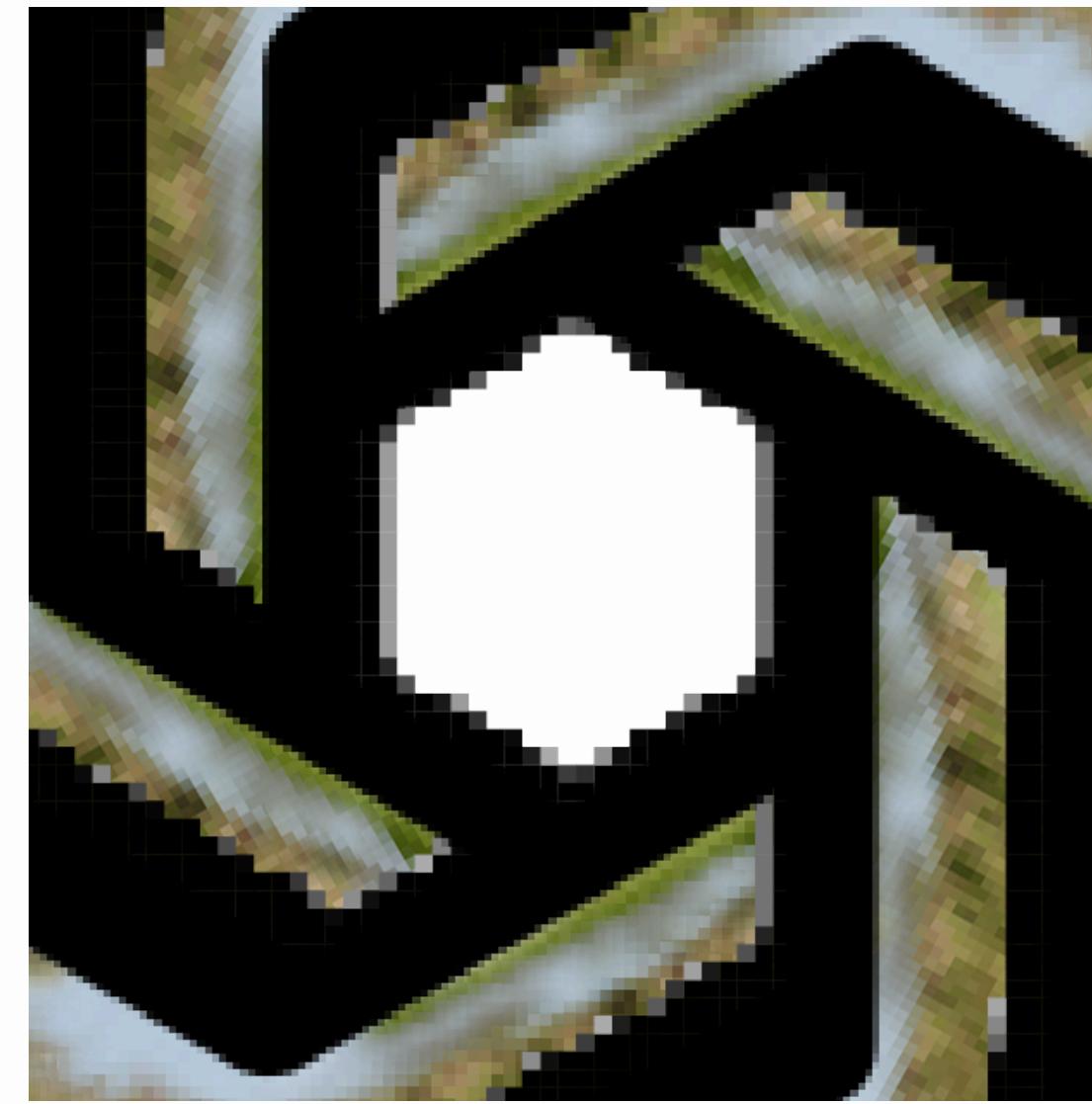


Through this visual reconfiguration, viewers are invited to consider the environmental footprint behind digital innovations that could be viewed as weightless and immaterial.

OPENAI



The riverbank can be observed here, along with the rush of water that seems to be converging towards the centre of the logo.



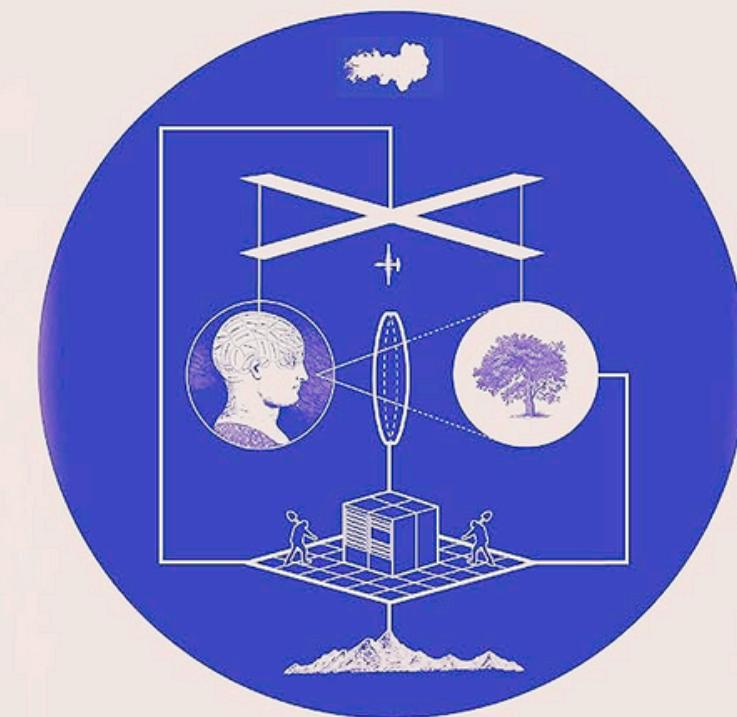
The empty space in the logo ultimately represents the metaverse. It asks viewers to think of alternative ways in which the waters could get channeled.

CONCLUSION

This series of reimagined iconography serves as both artistic intervention and critical inquiry. By deconstructing and reconstituting the logos of Apple, Amazon, Tesla and OpenAI, *Units of Measurement* makes visible the often obscured material realities behind these technological empires.

Each redesign functions as a visual accounting—a reckoning with the true costs embedded within familiar symbols that have become ubiquitous in contemporary life. The series challenges viewers to consider what has been lost and gained in order for us to hold our devices in our hands, receive the packages at our doorsteps, drive the vehicles on our roads, and interact with the algorithms shaping our information.

Units of Measurement ultimately invites a more conscious vision for technology—one that acknowledges the full spectrum of its material and social dimensions.



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