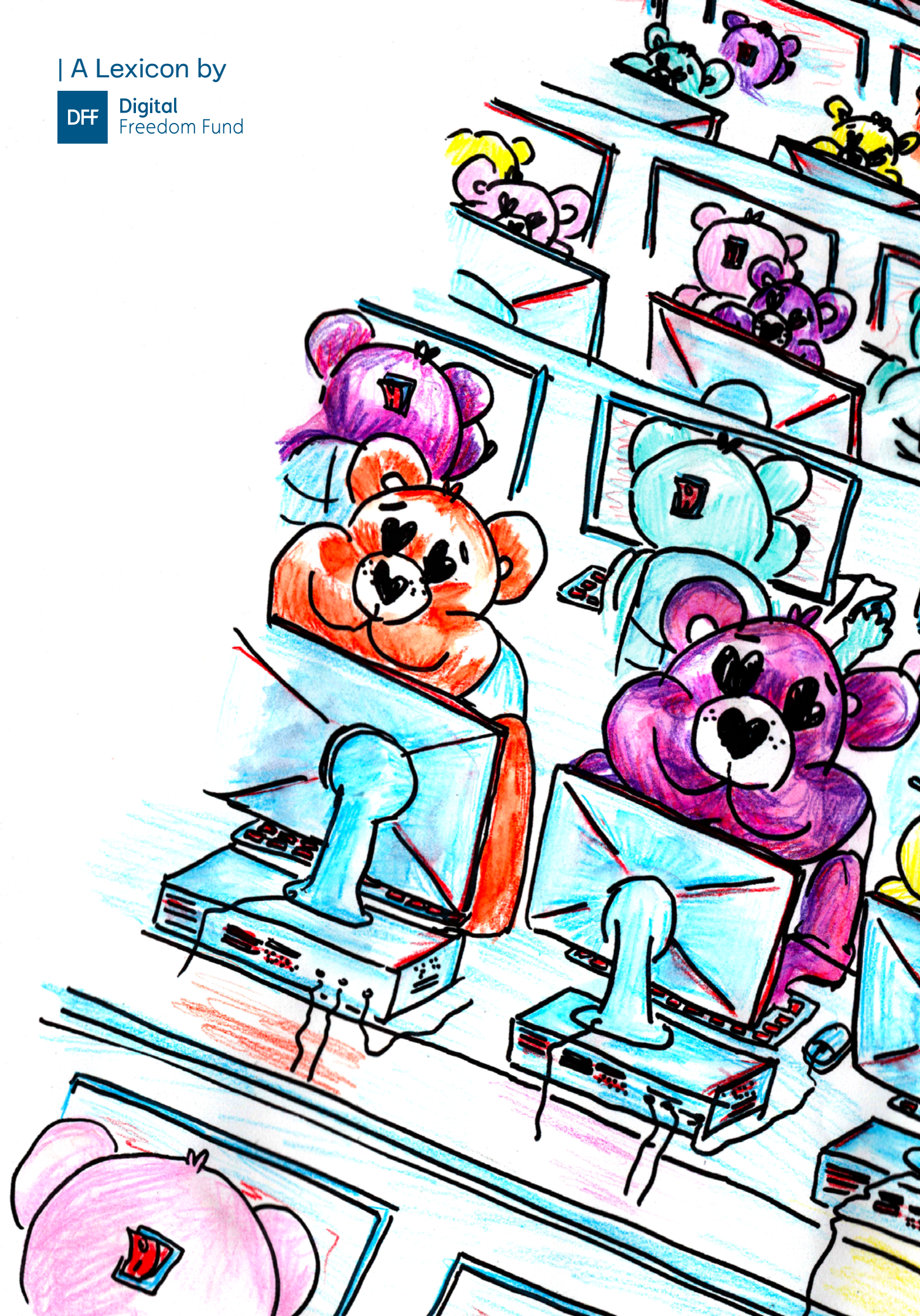


TALKING DIGITAL

| A Lexicon by

DFF

Digital
Freedom Fund



This lexicon was first drafted as material for the first **Digital Rights for All** workshop called “**Talking Digital**”. We struggled back then to find one document with different levels of definitions for tech jargon. Most notions in this lexicon were part of our first workshop activity called “Days of our lives”. During this exercise, the participants were to match notions such as Algorithm, interoperability, big tech etc. to a situation described in the text, as we followed one person going through their day.

This revised lexicon has a similar ambition: having one document where definitions of often used tech vocabulary can easily be found and highlighted through their social justice lens. Therefore, the lexicon offers multiple interpretations for these definitions. It is meant to propose different approaches to the concepts and invite the reader to use the one best suited to their unique context.

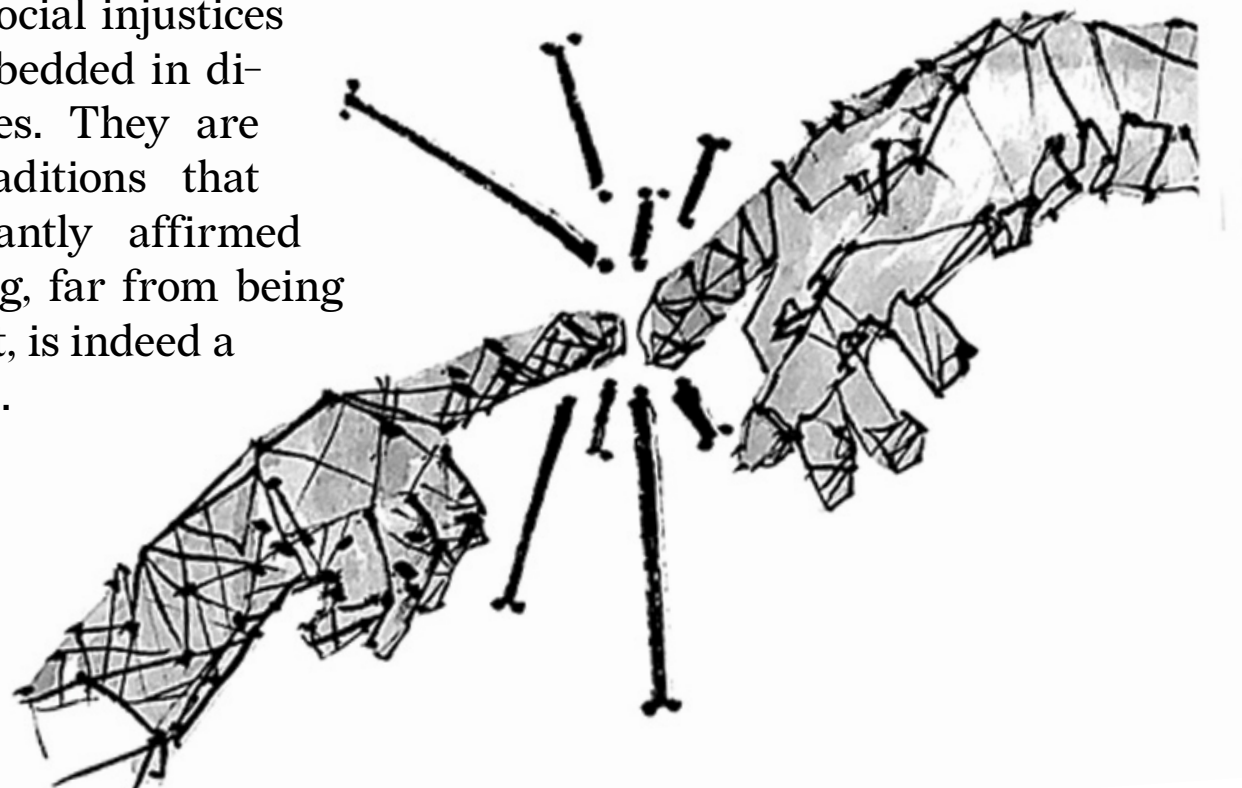
In this lexicon, you will find **technical, legal, historical, sociological, and philosophical definitions**. You will also see short descriptions and longer analyses. There are varied sources, from well-known free-to-use online encyclopaedias, non-profit reports, and legal texts to news articles, research articles, and essays.

Many of the definitions in the Lexicon come from the work of black and brown scholars, activists, and collectives. They have been, and continue to be, pioneers in the study and function of how racial and social injustices are also embedded in digital realities. They are part of traditions that have constantly affirmed that defining, far from being a neutral act, is indeed a political one.

We hope this lexicon will support organisers, individuals, and activists in finding suitable definitions. Hopefully, it will inspire new ones.

Introduction by
Laurence Meyer,
DFF Social & racial justice lead.

This lexicon was compiled by:
Adélaïde Hirwe
César Manso-Sayao
Laurence Meyer



“As designers, we wanted to help visualize the various topics touched upon in this lexicon, from systemic oppressions to capitalism drifts, by appealing to our own subjectivity.

We imagined an **ironical universe** mixing the narratives of digital self-defense or non-global internet, and borrowing from science fiction as well as both web and anti-racism, environmental activism culture and imagery.

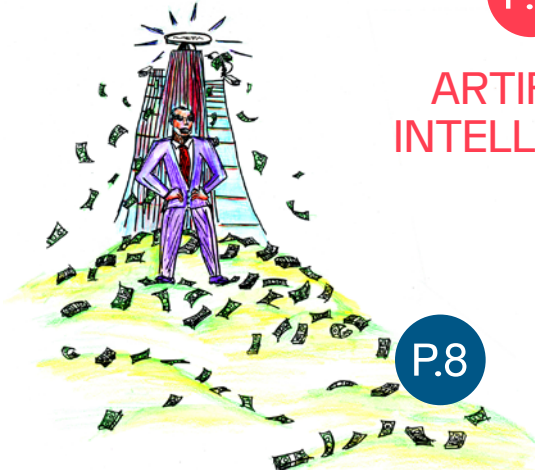
We are pleased to highlight the **political messages conveyed by the Talking Digital Lexicon**. We hope that our part will serve anyone who wants to overcome the current digital world's challenges, and build a fairer one.”

Designers of the Talking Digital Lexicon
Claire Zaniolo
Estelle Pom

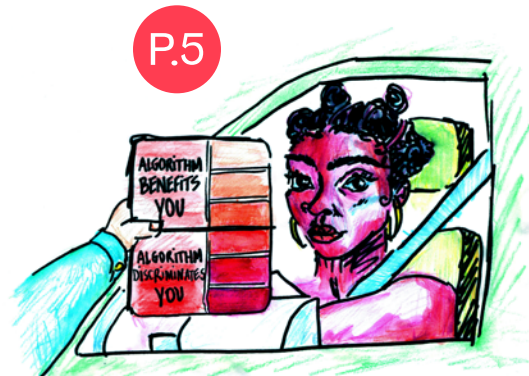
ILLUSTRATIVE SUMMARY



ALGORITHM



BIG TECH



ALGORITHMIC BIAS



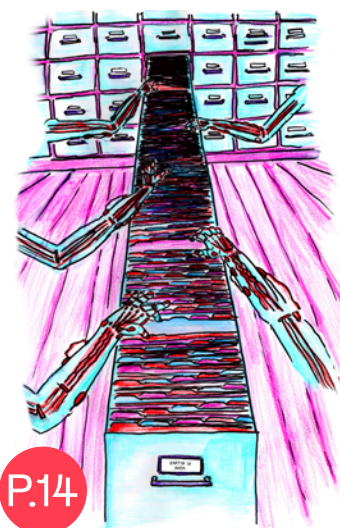
CONTENT MODERATION



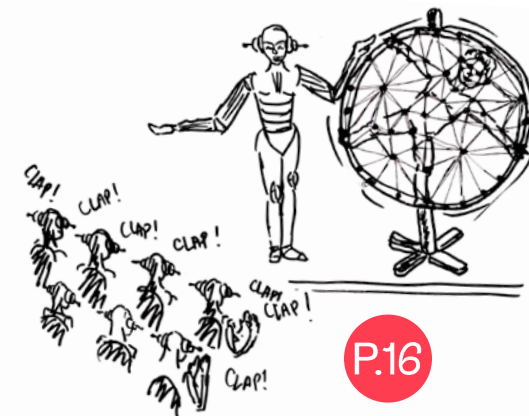
AUTOMATED DECISION-MAKING



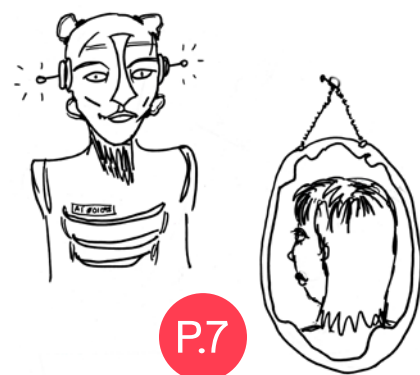
PERSONAL DATA



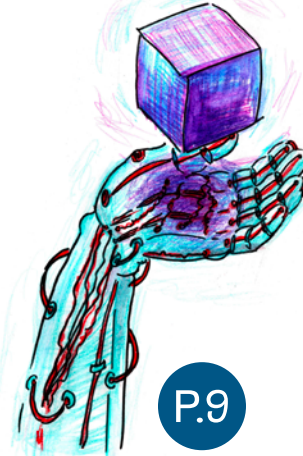
BIG DATA



DATA BODY



ARTIFICIAL INTELLIGENCE



BLACK BOX



DATA



BIOMETRIC DATA



DIGITAL



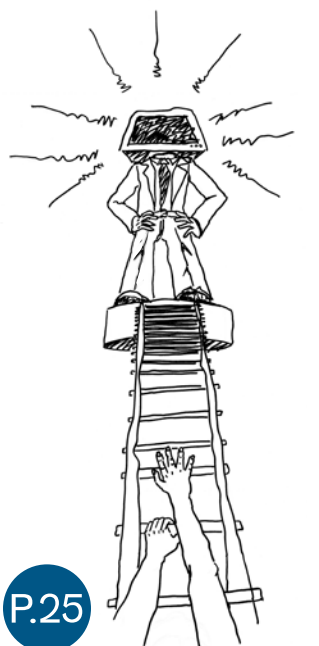
PREDICTIVE POLICING



FACIAL RECOGNITION TECHNOLOGIES



TECHNOLOGICAL SOLUTIONISM



TECHNOLOGY



INTEROPERABILITY



MACHINE LEARNING

ALGORITHM

DIANA NUCERA
AND MIMI ONUOHA
"The People's Guide to AI"
ALLIEDMEDIA.ORG
2020

"A series of steps that allow you to perform a particular task. Every algorithm takes in defined inputs (the things being acted upon) and has the goal of producing defined outputs (the results you want). Different algorithms can exist for accomplishing the same task. Algorithms are often judged by their efficiency, and efficiency can be science, an algorithm usually indicates a mathematical procedure for solving a recurrent problem."

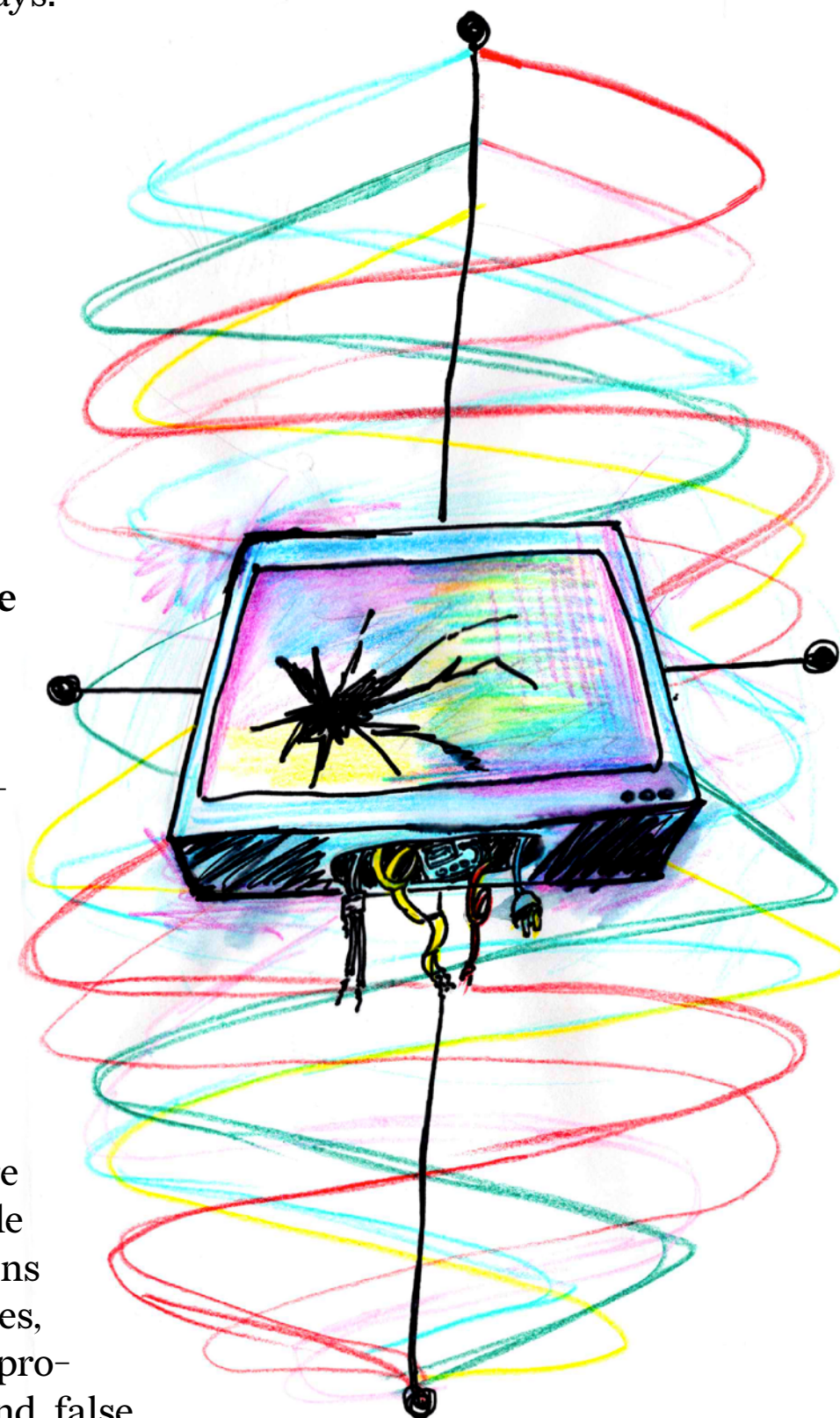
YURI GUREVICH
"What Is an Algorithm?"
(Revised).
MICROSOFT.COM
2014

"In our opinion, the notion of algorithm cannot be rigorously defined in full generality, at least for the time being. The reason is that the notion is expanding.

In addition to classical sequential algorithms, in use from antiquity, we have now parallel, interactive, distributed, real-time analog, hybrid, quantum, etc. algorithms, evaluated in different ways."

SAFIYA
UMOJA NOBLE
"Algorithms of Oppression"
NYUPRESS.ORG
PP. 26.
2018

"Part of the challenge of understanding algorithmic oppression is to understand that mathematical formulations to drive automated decisions are made by human beings. While we often think of terms such as 'big data' and 'algorithms' as being benign, neutral, or objective, they are anything but. The people who make these decisions hold all types of values, many of which openly promote racism, sexism, and false notions of meritocracy, which is well documented in studies of Silicon Valley and other tech corridors."



ALGORITHMIC BIAS ALGORITHMIC DISCRIMINATION

RUHA BENJAMIN

*"Race After Technology:
Abolitionist Tools for
the New Jim Code"*
RUHABENJAMIN.COM
2019

"They are, after all, programmed using algorithms that are constantly updated on the basis of human behavior and are learning and replicating the technology of race, expressed in the many different associations that the users make. This issue came to light in 2016, when some users searched the phrase 'three Black teenagers' and were presented with criminal mug shots.

Then when they changed the phrase to 'three White teenagers', users were presented with photos of smiling, go-lucky youths; and a search for 'three Asian teenagers' presented images of scantily clad girls and women.

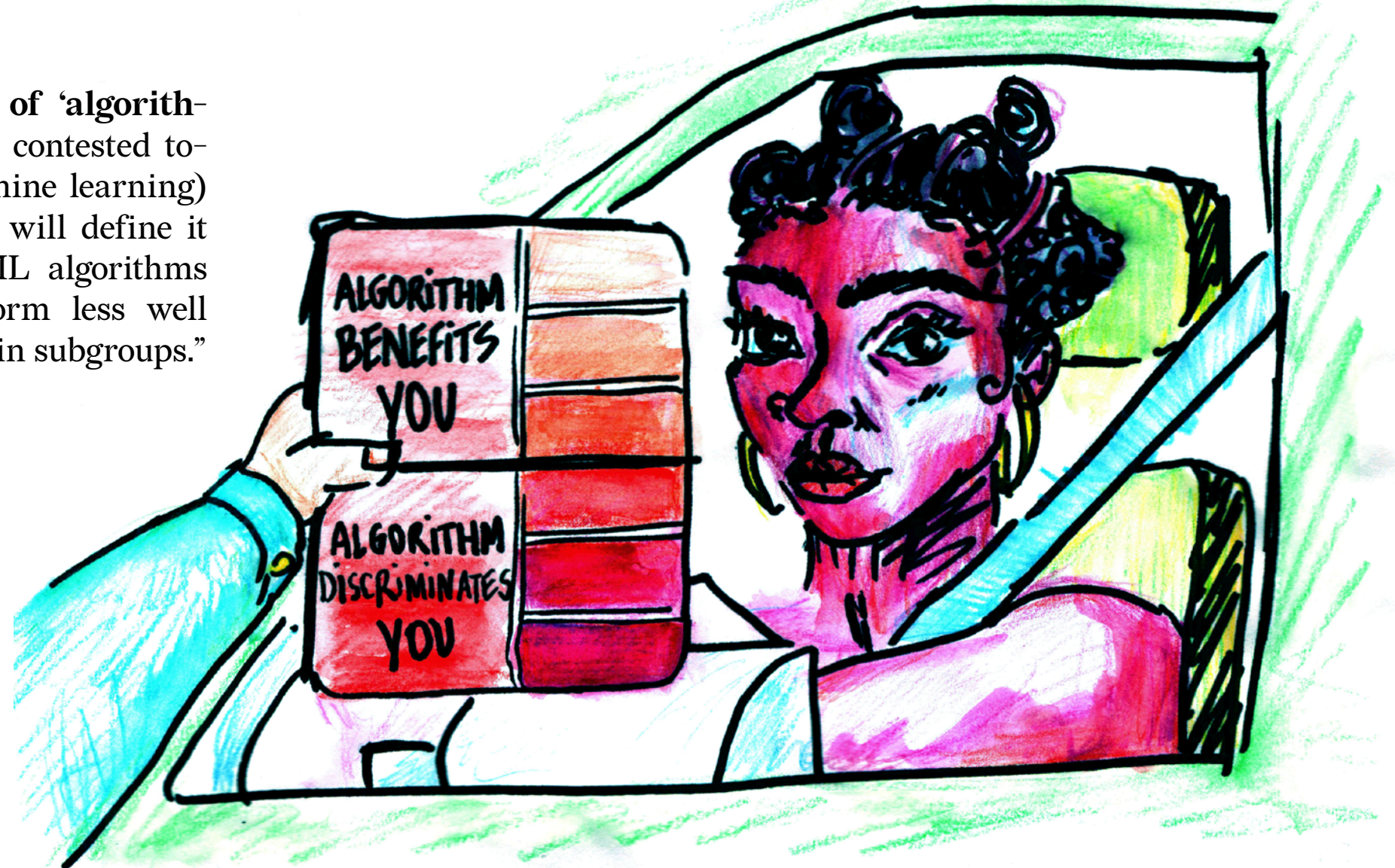
Taken together, these images reflect and reinforce popular stereotypes of Black criminality, White innocence, or Asian women's sexualization that underpin much more lethal and systemic forms of punishment, privilege, and fetishism respectively."

ALICE XIANG

*"Reconciling Legal and
Technical Approaches
to Algorithmic Bias"*
SSNR.COM
88 TENNESSEE
LAW REVIEW 649
2021

"The definition of 'algorithmic bias' is a hotly contested topic in the ML (machine learning) literature, so here I will define it broadly as when ML algorithms systematically perform less well for or penalize certain subgroups."

**"Taken together,
these images [...] reinforce
popular stereotypes of Black
criminality, White innocence, or
Asian women's sexualization that
underpin much more lethal and
systemic forms of punishment,
privilege, and fetishism
respectively."**



“Automated decision-making is when a computer makes a decision based on information it has gathered about you; a person uses information gathered by a computer to make a decision.”



AUTOMATED DECISION-MAKING

DIGITAL COUNCIL
FOR AOTEAROA

*“Towards Trustworthy and
Trusted Automated Decision-
Making in Aotearoa Report”*
[DIGITALCOUNCIL.GOV.T.NZ](https://digitalcouncil.govt.nz)
2021

**“Automated decision-
making is when:**

| a computer makes a decision
based on information it has gathered about you

| a person uses information
gathered by a computer to make a
decision. Automated decision-
making is also called ADM for short.”

DR EVE
SARIYIANNIDOU

*“Profiling and Automated
Decision-Making
under GDPR”*
[LINKEDIN.COM](https://www.linkedin.com)
2020

**“Automated decision-
making is a type of automated processing facilitated by technological means without human involve-**

ment and may or may not involve profiling. Article 22 [of the GDPR] introduces a general prohibition on solely automated decision-making, including profiling, when the decision based on such technology ‘has a legal effect on or similarly significantly affects someone.’

ALICE XIANG

*“Reconciling Legal and
Technical Approaches
to Algorithmic Bias”*
[SSNR.COM](https://ssrn.com)
88 TENNESSEE LAW
REVIEW 649
2021

**“Algorithmic decision-
making”** refers to decisions made using an ML or other statistical model trained on data. These decisions can be completely automated or used to inform human decision-makers.”

ARTIFICIAL INTELLIGENCE (AI)

“Artificial: Intelligence”
[MACMILLAN-
DICTIONARY.COM](https://www.macmillan-dictionary.com)
2022

“The use of computer technology to make computers and other machines think and do things in the way that people can.”



SABELO MHLAMBI
“From Rationality to Relationality: Ubuntu as an Ethical and Human Rights Framework for Artificial Intelligence Governance”
[CARRCENTER.HKS.
HARVARD.EDU](https://carrcenter.hks.harvard.edu)

CARR CENTER FOR HUMAN RIGHTS POLICY, HARVARD KENNEDY SCHOOL, NO. ISSUE 2020-009, PP. 1–27. JULY 2020

“Today’s salvation, deeply motivated by rationality as person-

hood, and enabled by capitalism and modern colonialism, is the use of artificial intelligence to automate decision making about the lives of humans. It is the same weaponization of rationality that has dominated Euro-American conquests.

The belief in the neutrality of automated decision-making systems is deeply misguided and shares the same flaws and contradictions of its predecessors. The negative effects of ADMS on groups historically marginalized by Euro-American modernity affirms the dehumanizing effects of basing the essence of personhood on rationality.”

DIANA NUCERA
AND MIMI ONUOHA
“The People’s Guide to AI”
[ALLIEDMEDIA.ORG](https://alliedmedia.org)
2020

“In a sense, AI represents a quest to imitate the human brain. It’s about making a machine brain that can mimic the kinds of tasks that we think are unique to humans. In other words, AI is about developing machines that can do what humans can. Considering how complicated the human brain is, it’s no wonder that we have only recently been able to

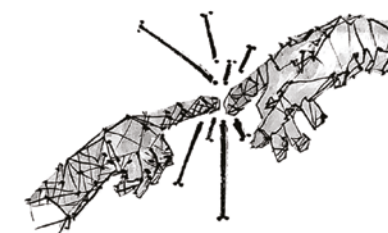
get machines to do this. After all, the human brain is so complex that we as humans have not yet tapped into its full potential. What we do understand about the brain is that there are multiple intelligences within humans and that our social environment influences how these intelligences are regarded. If AI is about imitating human intelligence, which forms of intelligence are we actually trying to mimic?”



“Artificial Intelligence Regulation. Article 3/Annex I”
[EUROPEAN-
COMMISSION.ORG](https://european-commission.org)
2021

“Article 3
Artificial Intelligence system’ (AI system) means software that is developed with one or more of the techniques and approaches listed in Annex I and can, for a given set of human-defined objectives, gene-

rate outputs such as content, predictions, recommendations, or decisions influencing the environments they interact with [...]



Annex I
Artificial Intelligence Techniques and Approaches referred to in Article 3:

| **Machine learning approaches**, including supervised, unsupervised and reinforcement learning, using a wide variety of methods including deep learning;

| **Logic- and knowledge-based approaches**, including knowledge representation, inductive (logic) programming, knowledge bases, inference and deductive engines, (symbolic) reasoning and expert systems;

| **Statistical approaches**, Bayesian estimation, search and optimization methods.”



BIG TECH

WOLMET BARENDREGT,
CHRISTOPH BECKER,
EUNJEONG CHEON,
ANDREW CLEMENT,
PEDRO REYNOLDS-CUÉLLAR,
DOUGLAS SCHULER
AND LUCY SUCHMAN

*“Defund Big Tech,
Refund Community,
Anti-Trust is Not Enough,
Another Tech is Possible”*
[TECHOTHERWISE.](https://techotherwise.org)
[PUBPUB.ORG](https://pubpub.org)

2021

“[...] First, the Big Tech ‘visionaries’ invariably started with technologies based on research at institutions that rely on significant public funding. The venture capitalists did not take most of the risk, nor did the technologists create the basis for the market valuation of their developments on their own. Instead, as economist Mariana Mazzucato (2013) and others have shown, far from getting out of the way of private innovation the State paves the way. It is the State, not private capital, that funds the long-term, high-risk research and development (R&D) that underpins Big Tech.

[...] Finally, Big Tech companies are so highly profitable because they generate economic value at enormous scale. But who creates much of that value? Users. Facebook and Google sell user profiles, composed of content that was created by their users—not the company. What has value in a user profile is not the data structure, but the record of choices that users make and the content that they create.”

LINDA ROSENCRANCE

“Big Tech”

[WHATIS.TECHTARGET.COM](https://whatistechtarget.com)

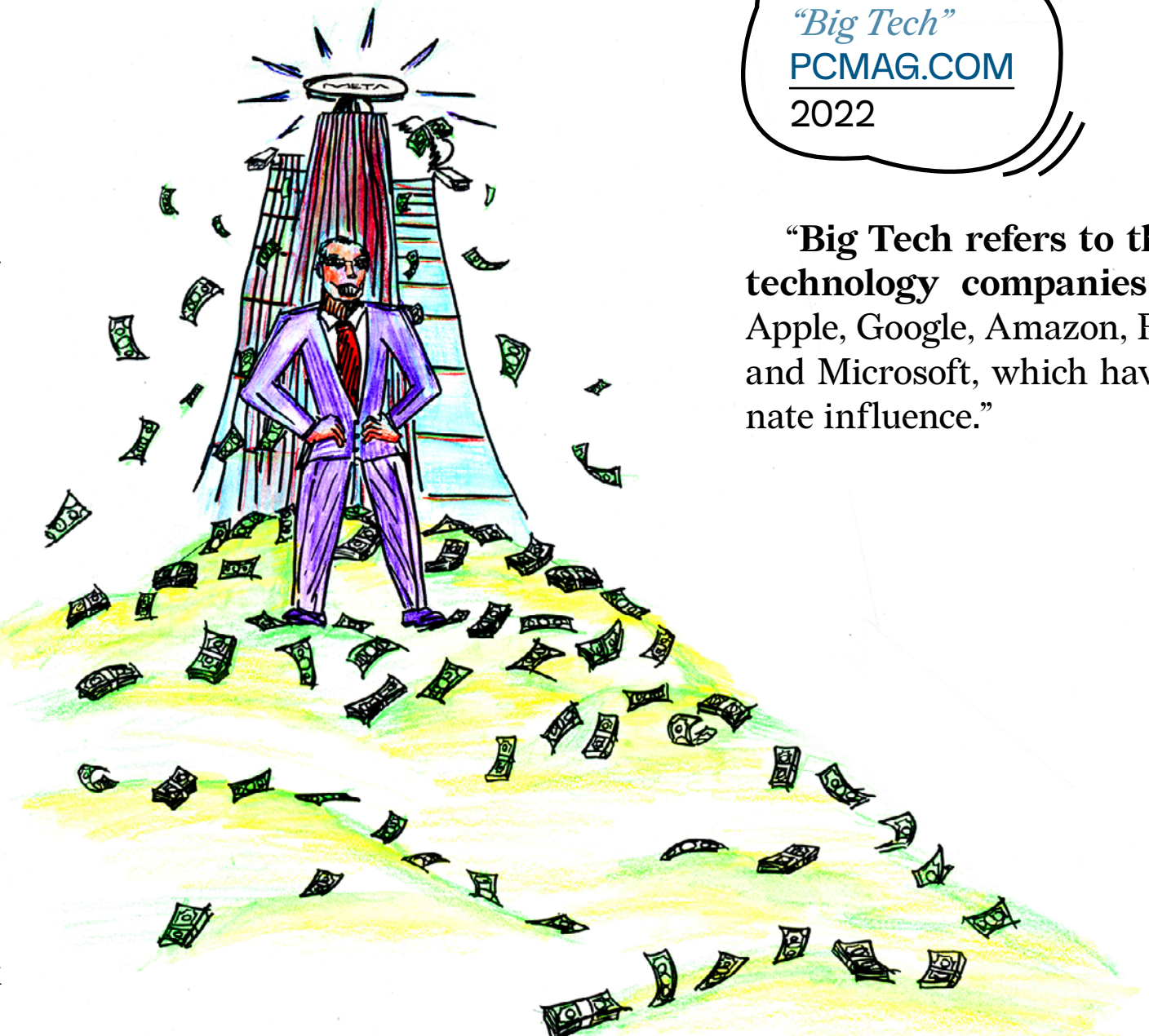
“Big Tech is a term that refers to the most dominant and largest technology companies in their respective sectors.”

“Big Tech”

[PCMAG.COM](https://pcmag.com)

2022

“Big Tech refers to the major technology companies such as Apple, Google, Amazon, Facebook, and Microsoft, which have inordinate influence.”



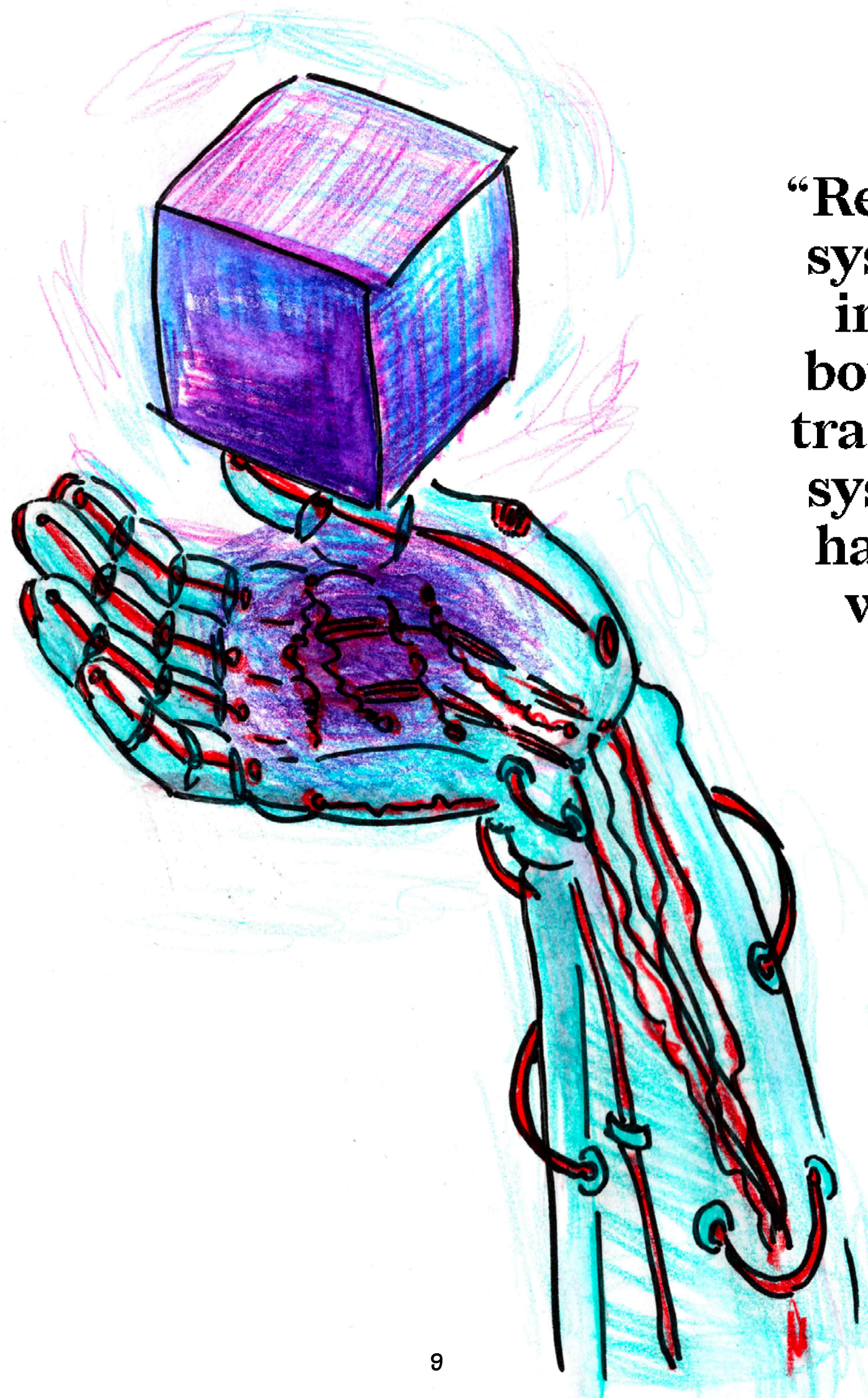
BLACK BOX

"Black Box"
MACMILLAN-
DICTIONARY.COM
2022

"A computer or similar piece of equipment that performs a complicated job, although the person using it does not understand how it works."

MATTIA SETZU ET AL.
*"GLocalX - From Local
to Global Explanations
of Black Box AI Models"*
SCIENTEDIRECT.COM
2021

"AI models often are 'black boxes' which we are not able to understand. Relying on these models has a multifaceted impact and raises significant concerns about their transparency. Applications in sensitive and critical domains are a strong motivational factor in trying to understand the behavior of black boxes [...] Relying on black box systems is becoming increasingly risky both for their lack of transparency and the systematic bias they have shown in real-world scenarios."



"Relying on black box systems is becoming increasingly risky both for their lack of transparency and the systematic bias they have shown in real-world scenarios."

CONTENT MODERATION

"What Is Content Moderation?"

[BESODO.COM](https://www.besodo.com)

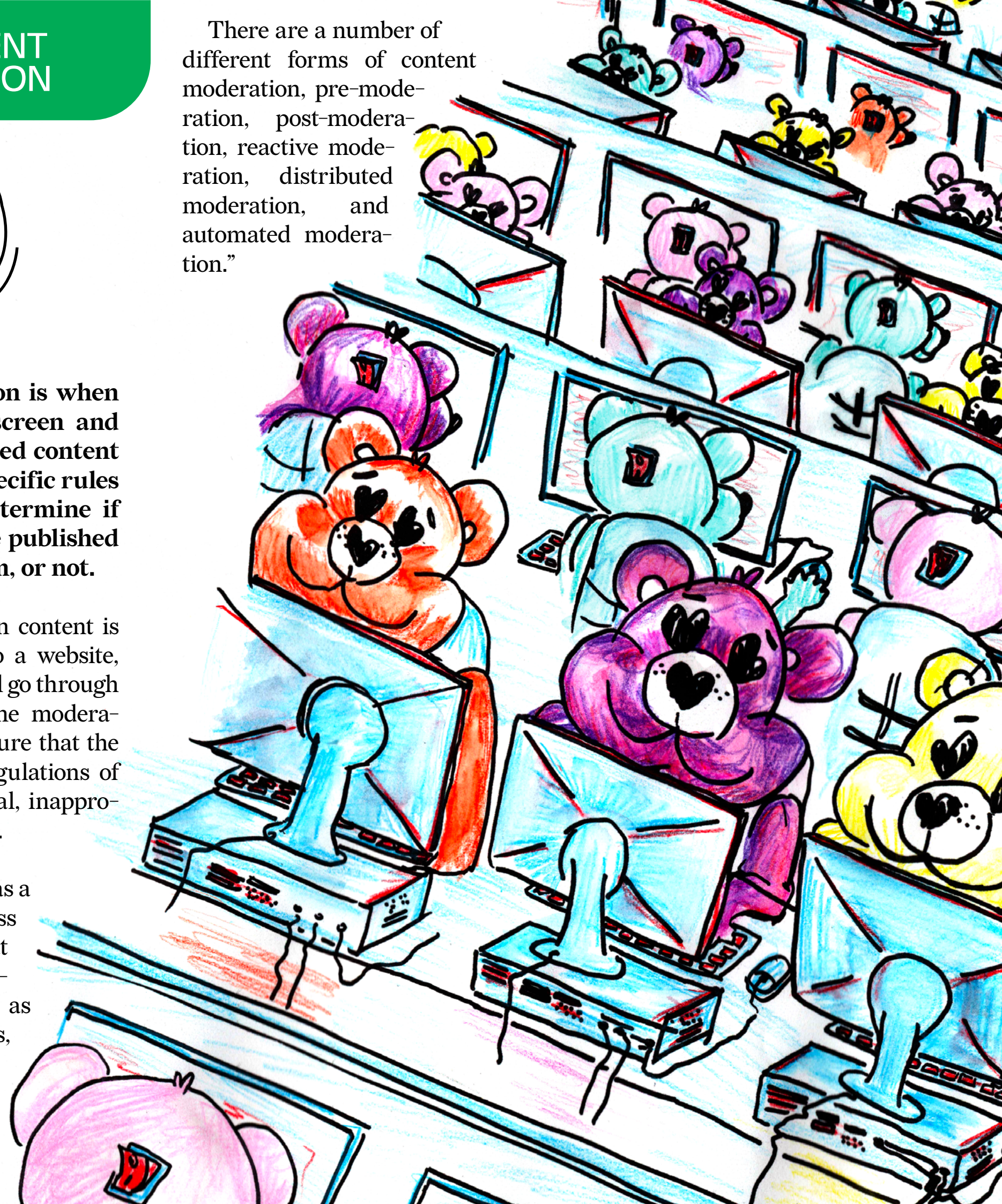
2020

"Content moderation is when an online platform screen and monitor user-generated content based on platform-specific rules and guidelines to determine if the content should be published on the online platform, or not.

In other words, when content is submitted by a user to a website, that piece of content will go through a screening process (the moderation process) to make sure that the content upholds the regulations of the website, is not illegal, inappropriate, or harassing, etc.

Content moderation as a practice is common across online platforms that heavily rely on user-generated content, such as social media platforms, online marketplaces, sharing economy, dating sites, communities and forums, etc.

There are a number of different forms of content moderation, pre-moderation, post-moderation, reactive moderation, distributed moderation, and automated moderation."



TERRY FLEW, ET AL.

"Internet Regulation as Media Policy: Rethinking the Question of Digital Communication Platform Governance"

[INGENTACONNECT.COM](https://ingentaconnect.com)

JOURNAL OF DIGITAL

MEDIA & POLICY

VOL. 10, NO. 1, PP. 33–50.

2019

"The screening, evaluation, categorisation, approval or removal/hiding of online content according to relevant communications and publishing policies. It seeks to support and enforce positive communications behaviour online, and to minimise aggression and anti-social behaviour."

MARK HAY

"How Ai Lets Bigots and Trolls Flourish While Censoring LGBTQ+ Voices"

[MIC.COM](https://mic.com)

2021

"Oliva, a researcher who studies anti-LGBTQ+ hate speech and efforts to control it online, wanted to see how the tool would react to drag queens' mock impolite speech, like their constructive uses of reclaimed slurs, versus the dog whistles white supremacists use to

make their hateful bile sound calm and reasonable. He threw in Obama and Trump's tweets as well-known points of comparison for civil and toxic posts, respectively.

Perspective (an AI tool to measure online toxicity) rated over a dozen drag queens' accounts on average more toxic than Duke's. It rated just a fourth of the drag queen accounts Oliva fed it less toxic than leading neo-Nazi Richard Spencer.

Notably, Perspective decided a tweet from the virulent white nationalist Stefan Molyneux claiming 'the three major races have different brain volumes and different average IQs,' a blatantly hateful, ignorant, and inflammatory statement, was 21.7% toxic. Meanwhile, it decided that a tweet by drag queen Mayhem Miller that simply states, 'I am black. I am gay. I am a man. I am a drag queen. If those are not enough for you... kindly, fuck off!!!' was 95.98% toxic."

POSTING INTO THE VOID

"A Community Report by Hacking//Hustling"

[HACKINGHUSTLING.ORG](https://hackinghustling.org)

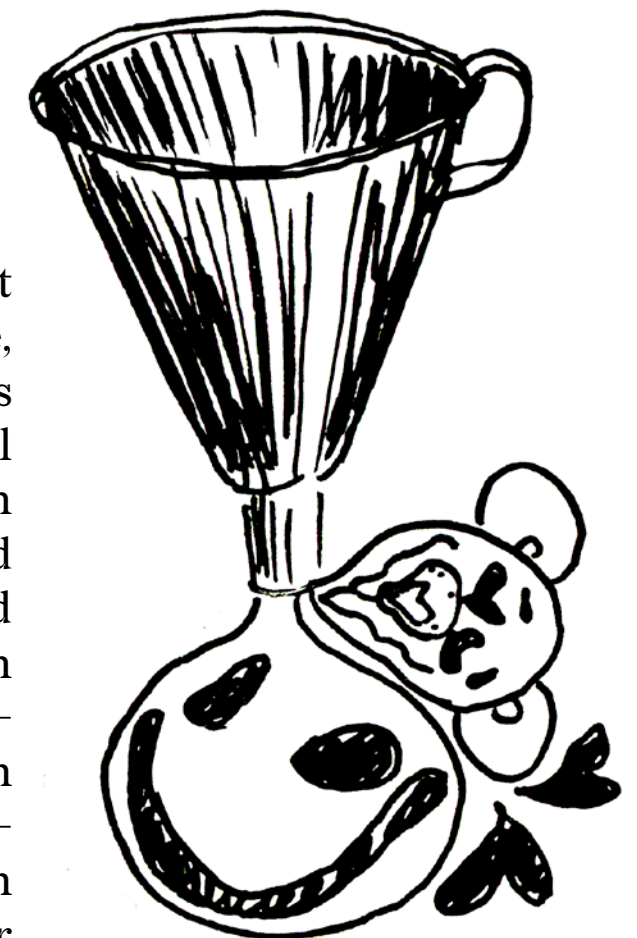
2020

"[...] in early Internet communities, the labor of content

moderation was undertaken by volunteers who were part of their online communities. These content moderation practices were developed and implemented by the communities they served. These practices and mechanisms of content moderation were 'often direct and visible to the user.' These overt moderation actions gave users an opportunity to comply and be in dialogue with moderators

As platforms grew and began to turn a profit, sex workers, who were some of the first to use these platforms (Patreon and Tumblr, for example), were then deemed high-risk and deplatformed. A shadowban ensures that content that platforms deem inappropriate, high-risk, or low value speech is invisible to other users, but still allows an account to remain on the platform in order to make ad revenue off of the shadowbanned individual. The shadowban is an integral part of surveillance capitalism, where the user is still on the metadata collection and surveillance matrix. The platform can still surveil, but the user loses their voice."

#BLM
#BOYCOTT
#ONLINEACTIVISM
#FRIDAYSFORFUTURE
#GENDERNONCONFORMING
#CIVILDISOBEDIENCE
#STOPASIANHATE
#ANTIRACISM
#METOO



DATA

“Data”
MACMILLAN
DICTIONARY.COM
2022

“1 | **facts or information** used for making calculations or decisions.

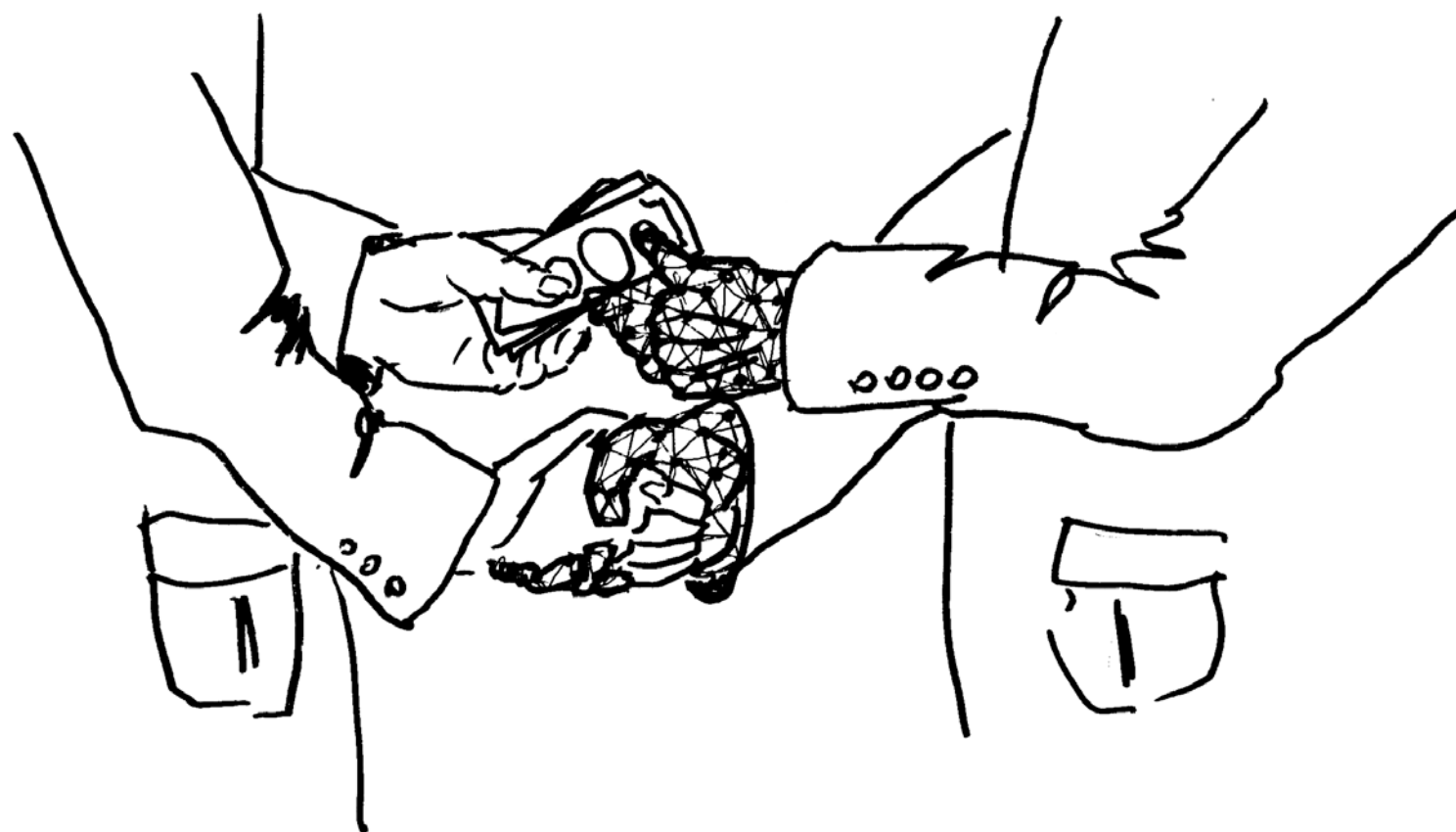
2 | **information** in a form that a computer can use”

LEWIS, T.,
GANGADHARAN, S. P.,
SABA, M., PETTY, T.
*“Digital Defence Playbook:
Community Power Tools
for Reclaiming Data.
Detroit: Our Data Bodies”*
ODBPORG.ORG
2018

“Data can be many different things. It can be digital, personal, interpersonal (person to person). It can be collected by us or from us, provided to us by companies, or taken from us by companies. Data can be used to make decisions about us, to craft or tell our stories, or even connect us to something, someone, a service or to be criminalized. Data and how we use or understand it is vast, as



**“Data is kind of capital,
on par with financial capital,
for creating new digital
products and services.”**



we can see from the list we generated. ‘Data is: facts, details, statistics, or any information collected together for reference or analysis.’ Data is not all digital. Not all data is equal (created equally).”

JATHAN SADOWSKI

*“When Data Is Capital:
Datafication, Accumulation,
and Extraction”*

BIG DATA & SOCIETY

VOL. 6, NO. 1.

2019

“[...] On one hand, data is cast as a **digital raw material** – constant capital – necessary in the production of commodities. It is hard to read media articles and business reports about data without seeing it called ‘the new oil.’

[...] On the other hand, data is cast as a **commodity produced by the digital labour** of people posting on Facebook, clicking on Google, exercising with Fitbits, and all the other things we do that create data and that data is created about.

[...] I suggest a **better framing of data is as a form of capital** that is distinct from, but has its roots in, economic capital. Data capital is more than knowledge

about the world, it is discrete bits of information that are digitally recorded, machine processable, easily agglomerated, and highly mobile. Like social and cultural capital, data capital is convertible, in certain conditions, to economic capital.

[...] **Data capital is institutionalised in the information infrastructure** of collecting, storing, and processing data; that is, the smart devices, online platforms, data analytics, network cables, and server farms.

[...] **When data is treated as a form of capital**, the imperative to collect as much data, from as many sources, by any means possible intensifies existing practices of accumulation and leads to the creation of new ones.”

JENI TENNISON

*“The Words We Use in Data
Policy: Putting People Back
in the Picture”*

DEFENDDIGITALME.ORG

2021

“Data’s abstract nature makes it **hard to conceptualise and talk about**. And so we use **metaphors**. We speak of data being like oil, water or carbon dioxide; of

data shadows, footprints and exhaust. Metaphors turn data into something we grasp and reason about through analogy. Different metaphors contain within them different implications, which may or may not be accurate. In the most common and egregious example, ‘data is like oil’ implies that it’s a precious natural resource we should extract, own and hoard to get value from, when data’s non-rivalrous nature means it is infinitely replicable.”

PAUL SONDEREGGER

“Why Big Data is the Capital Driving the Digital Age”

CMO.COM.AU

2016

“Data is kind of capital, on par with financial capital, for creating new digital products and services. Unlike the metaphors we use about data – that it’s the new oil, gold or new electricity – what we’re saying with data capital is that it fulfils the literal textbook definition of capital. It is a produced good, as opposed to a natural resource, and it’s a necessary input into other goods or services.”



BIG DATA

“Big Data”

WEBOPEDIA.COM

2022

“The data generated by on-line activity, the quantities of which are so large that new tools and methods are needed to analyse it.”

“Big Data”

MACMILLAN

DICTIONARY.COM

2022

“Big Data is a phrase used to mean a massive volume of both structured and unstructured data that is so large it is difficult to process using traditional database and software techniques. In most enterprise scenarios the volume of data is too big, or it moves too fast, or it exceeds current processing capacity.”

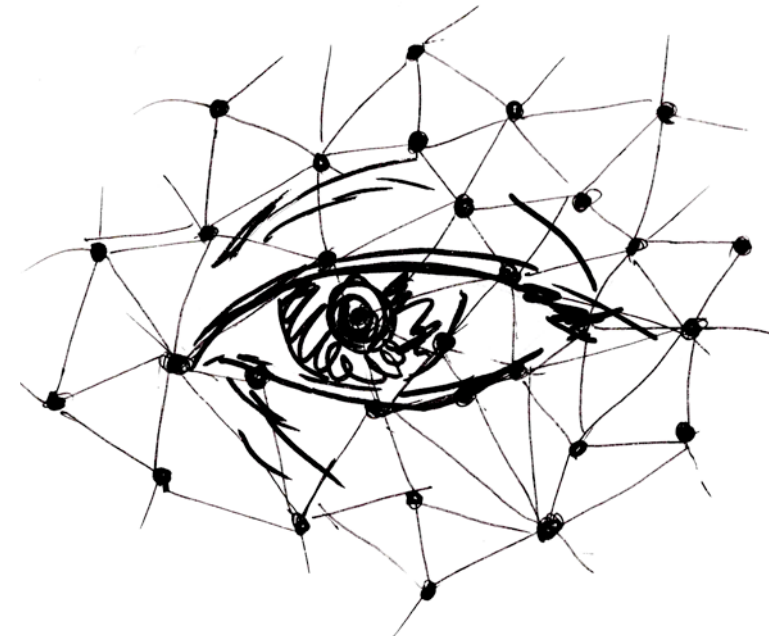


BIOMETRIC DATA BIOMETRICS 2

SIMONE BROWNE

*"Dark Matters: On the
Surveillance of Blackness"*
DUKE UNIVERSITY PRESS
2015

"[...] biometrics, in its simplest form, is a means of body measurement that is put to use to allow the body, or parts and pieces and performances of the human body, to function as identification. [...] What I am suggesting here is that branding in the transatlantic slave trade was a biometric technology, as it was a measure of slavery's making, marking, and marketing of the black subject as commodity."



EUROPEAN PARLIAMENT
*"General Data Protection
Regulation (GDPR)"*
EUR-LEX.EUROPA.EU
2016

"Article 4: 'biometric data' means personal data resulting from specific technical processing relating to the physical, physiological or behavioural characteristics of a natural person, which allow or confirm the unique identification of that natural person, such as facial images or dactyloscopic data."

#GoodID
"Biometric Data"
2021

"Biometric data is anything that relates to the measurement of people's physical features and characteristics. In digital identity terms, this data is used to prove a person's uniqueness and verify that someone is who they say they are. [...] However, biometric data also presents privacy concerns. Data breaches could have severe consequences, as users are not able to simply reset a password when their biometric data is stolen. Biometrics also present issues around privacy,



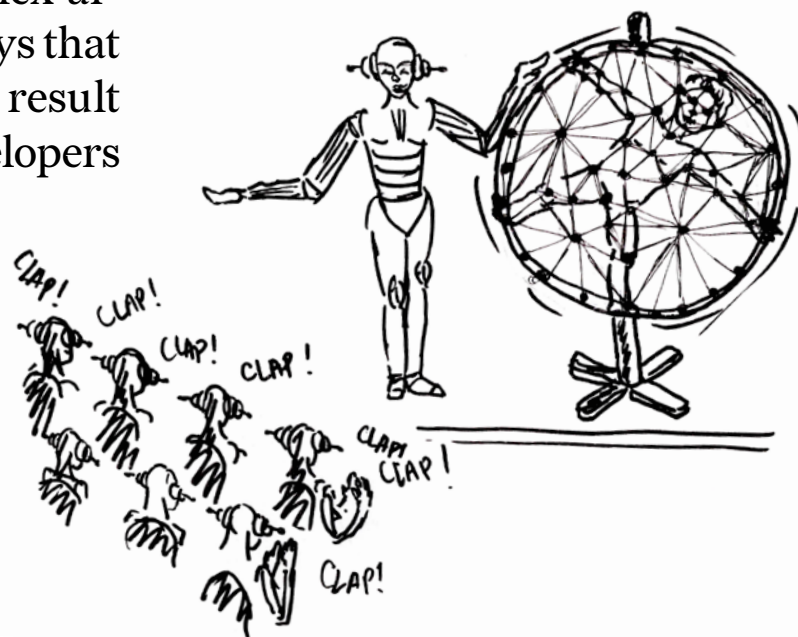
"Branding in the trans-atlantic slave trade was a biometric technology, as it was a measure of slavery's making, marking, and marketing of the black subject as commodity."

surveillance and state control, and biometric ID programmes have been met with mistrust from users because of the nature of the data being gathered by authorities.”

“Biometric Data”
[TECHOPEDIA.COM](https://techopedia.com)
2022

“Biometric data is widely used in systems that attempt to identify a specific user or other human through unique characteristics. Computer image processing is one form of biometric analysis that uses biometric data. Digital fingerprint analysis also relies on the use of biometric data for identification purposes.

In most biometric analysis systems, there is demand for a large amount of biometric data. This data must be stored and somehow secured from unauthorized access. These systems rely on complex algorithms that sort data in ways that will achieve an identifying result in a given application. Developers use key features that are unique from one person to another in order to make biometric identification effective.”



DATA BODY

LEWIS, T.,
GANGADHARAN, S. P.,
SABA, M., PETTY, T.
*“Digital Defence Playbook:
Community Power Tools
for Reclaiming Data.
Detroit: Our Data Bodies”*
[ODBPROJECT.ORG](https://odbproject.org)
PP. 31.
2018

“Discrete parts of our whole selves that are collected, stored in databases, the cloud, and other spaces of digitally networked flows, and used to make decisions or determinations about us. They are a manifestation of our relationships with our communities and institutions, including institutions of privilege, oppression, and domination.”

PERSONAL DATA (PERSONALLY IDENTIFIABLE INFORMATION, PII)

EUROPEAN COMMISSION
“What Is Personal Data?”
[EC.EUROPA.EU](https://ec.europa.eu)
2022

“Personal data is any information that relates to an identified or identifiable living individual. Different pieces of information, which collected together can lead to the identification of a particular person, also constitute personal data. Personal data that has been de-identified, encrypted or pseudonymised but can be used to re-identify a person remains personal data and falls within the scope of the GDPR.

Personal data that has been rendered anonymous in such a way that the individual is not or no longer identifiable is no longer considered personal data. For data to be truly anonymised, the anonymisation must be irreversible.”



EUROPEAN PARLIAMENT
*“General Data Protection
Regulation (GDPR)”*
[EUR-LEX.EUROPA.EU](https://eur-lex.europa.eu)
2016

“Article 4 (1): ‘personal data’ means any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person.”

DIGITAL

"Digital"
[WEBOPEDIA.COM](https://www.webopedia.com)
2022

"Digital describes systems that generate and process binary data. Computers are fundamentally digital machines because they process information that has been encoded as binary values either one that's positive (represented as 1) or one that's non-positive (represented as 0). These values, called bits, are combined to form bytes that serve as the foundation for all computer systems. [...]"

Similar to the Industrial Revolution that was characterized by new manufacturing processes in the 18th and 19th centuries, the Digital Revolution marked a global shift in culture and economics that was influenced by the rise of digital electronics. The Digital Revolution also signified the start of the Information Age."



MERRIAM-WEBSTER
DICTIONARY
"Digital"
[MERRIAM-WEBSTER.COM](https://www.merriam-webster.com)
2022

“1 | Composed of data in the form of especially binary digits.

2 | Characterized by electronic and especially computerized technology.”

FACIAL RECOGNITION

JOY BUOLAMWINI,
VICENTE ORDÓÑEZ,
JAMIE MORGENSTERN,
AND ERIK LEARNED-MILLER

*“Facial Recognition
Technologies: A Primer”*
[GLOBAL-UPLOADS.
WEBFLOW.COM](https://global-uploads.webflow.com/2020)
2020

“ | 1. Is there a face in the image?”

Face or facial detection is the process of detecting the presence of faces and locating those faces in an image or video. Detecting the presence of a face and locating it in the image is not the same as assigning a unique identity to a detected face or trying to determine attributes like gender or age.

In particular, the process of face detection does not report anything about who someone is or what kind of person someone might be. It is merely the process of attempting to find and locate faces in an image. Subsequent analysis performed on a face often depends on the successful completion of face detection.

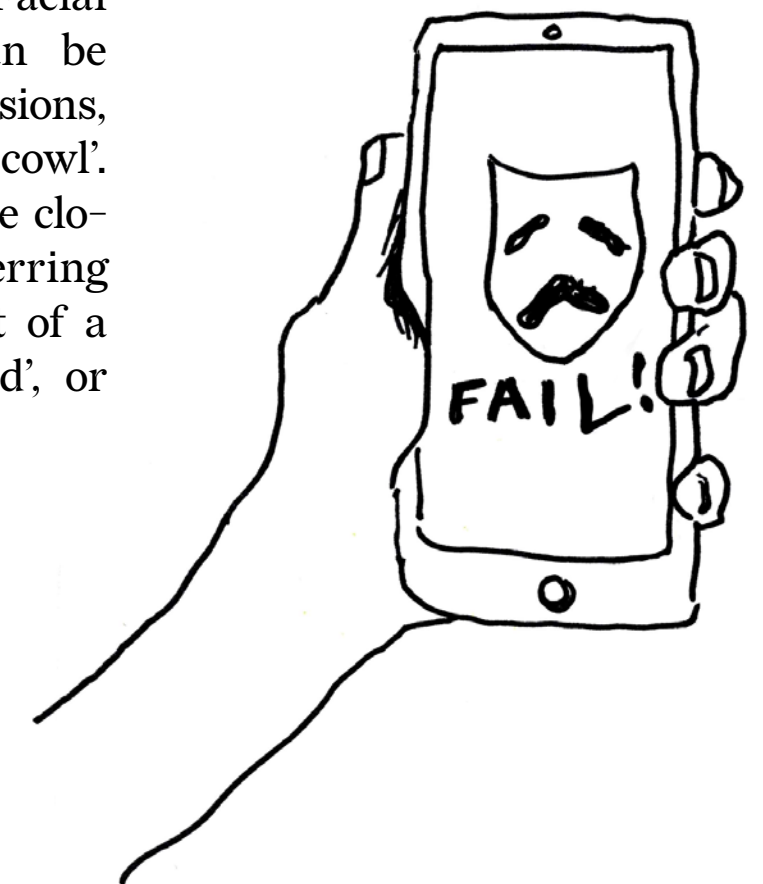
| 2. What kind of face is shown in the image?

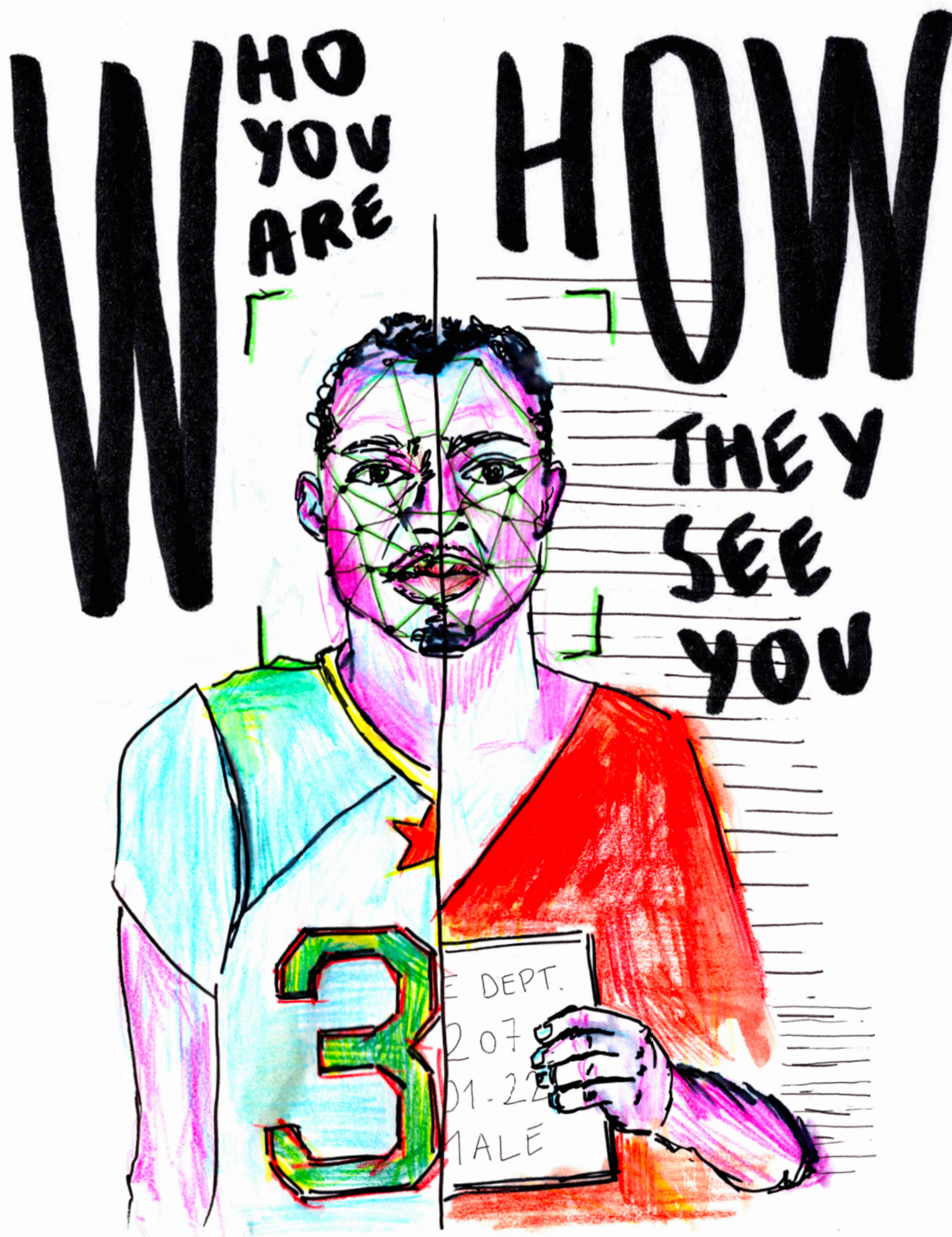
Face attribute classification and face attribute estimation. Software can be developed to assess the attributes of a person from their face. When these attributes have been separated into distinct categories, such as gender, race, or ethnicity, this may be called face attribute classification.

When the attribute is a number, like an age, the term face attribute estimation is more appropriate. Finally, software to detect and locate accessories like glasses and scarves or face attributes like beards or moustaches may be referred to as face attribute detection.

Emotion, affect, and facial expression classification. Facial recognition technologies can be used to classify facial expressions, such as ‘smile’, ‘frown’, or ‘scowl’. They can also be used for the closely related problem of inferring the emotional state or effect of a person, such as ‘happy’, ‘sad’, or ‘angry’.”

“Face identification software can only match the image of a face to a person for whom it already has some appearance information.”





| 3. Whose face is shown in the image?

The final category of applications is related to establishing the identity of a person.

Face recognition or facial recognition - the process of using digital representations of faces to try to identify or verify the identity of a unique individual. The image of a particular individual we wish to recognize is often referred to as the query image or a query. There are two subtly different types of recognition, referred to as face verification and face identification.

Face verification is one type of face recognition. It attempts to determine whether an image shows a particular person. For example, software on a cell phone may try to answer the question, 'Can it be verified that the camera shows the phone's owner?'. A query image is deemed to be either a match, if it appears to show the owner, or a mismatch otherwise.

There are two common ways to perform face verification. In the first, one asks a question such as 'Does this image show Janelle Smith?', in which the person of interest is named. A common use for this type of face verification is access control, such as software

that allows the owner of a device or a service to access it. In the second common version of face verification, one is given two pictures and asks, 'Is the first person the same as the second person?' In this case, it is not necessary to know the identity of either person to answer the question. Face verification is also referred to as 1-to-1 matching or 1-to-1 comparison.

Face identification attempts to answer the question, 'Whose face is this?'. Face identification software can only match the image of a face to a person for whom it already has some appearance information. The set of people for whom an application has stored appearance information is called the gallery.

Simply put, this is the set of people that a face identification system could possibly identify. Face identification can be used for surveillance, to find a person of interest, or for the identification of subjects that are either unable or unwilling to respond. It may be referred to as 1-to-many comparison, 1-to-many matching, 1-to-many identification, or 1-to-N identification."

INTEROPERABILITY

“Interoperability”
[TECHOPEDIA.COM](https://techopedia.com)
2022

“Interoperability is the property that allows for the unrestricted sharing of resources between different systems. This can refer to the ability to share data between different components or machines, both via software and hardware, or it can be defined as the exchange of information and resources between different computers through local area networks (LANs) or wide area networks (WANs).

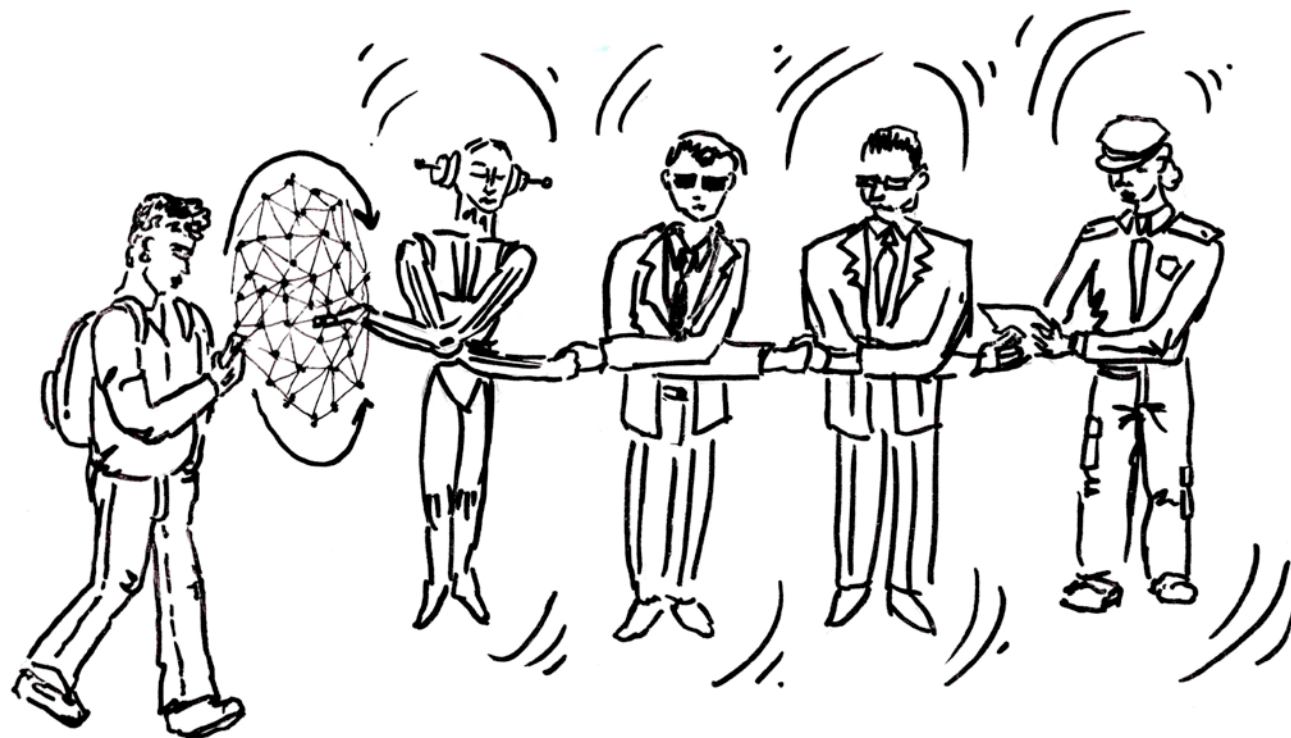
Broadly speaking, interoperability is the ability of two or more components or systems to exchange information and to use the information that has been exchanged.”

ALEX PETROS
*“Why We Can’t Be Friends:
We Need Interoperability
in Digital Markets”*
[PUBLICKNOWLEDGE.ORG](https://publicknowledge.org)
2021

“Think of interoperability as a necessary, but not sufficient,



“At the click of a button, they are able to check whether he has applied for asylum before; [...] has any previous criminal records; whether police are actively searching for him and even how many times he has entered the EU before”



condition to help competition flourish. The current state of competition in tech markets is bleak. Massive firms like Google and Facebook have become gatekeepers to the wider internet economy. This gives them the ability to pick winners and losers in not just their own markets, but the wider internet economy as well.

Interoperability is all about taking this power of strategic placement away from massive platforms, and allowing individuals to choose the best, not just the biggest options. [...] It's important to distinguish between interoperability and data portability. We define interoperability as the ability for different services and platforms to work together and interconnect, whereas data portability is a user's ability to take their data from one platform to another.”

CRISTINA BLASI CASAGRAN
*“Fundamental Rights
 Implications of Interconnecting
 Migration and Policing
 Databases in the EU”*
 HUMAN RIGHTS LAW REVIEW
 VOL. 21, ISSUE 2, PP. 433–457.
 2021

“M.A. is a thirteen-year-old Syrian boy who has managed to get to the Greek border looking

for safety and a better life. His parents could not travel with him, so he is an unaccompanied minor arriving in the European Union (EU).

At the border, Greek authorities check his passport, collect his fingerprints and introduce his personal details into their system. At the click of a button, they are able to check whether he has applied for asylum before; whether he has any previous criminal records; whether police are actively searching for him and even how many times he has entered the EU before (with visa and without). Although he has no criminal records and is not sought by police, a search ‘hit’ in one of the connected databases alerts the border guard that he has been denied asylum in the EU. Thus, his fate is sealed—he faces the choice of a forcible return to Turkey or a precarious life in limbo living as an irregular migrant in Greece.

Situations like these are now possible in the EU as the Interoperability Regulations ((EU) 2019/817 and (EU) 2019/818) entered into force in the EU in 2019.”

MACHINE LEARNING

ARTHUR L. SAMUEL

*"Some Studies in Machine
Learning Using the Game
of Checkers"*

IBM JOURNAL OF RESEARCH
AND DEVELOPMENT

VOL. 44, NO. 1.2, PP. 206–26.
2000

“Field of study that gives com-
puters the ability to learn without
being explicitly programmed.”

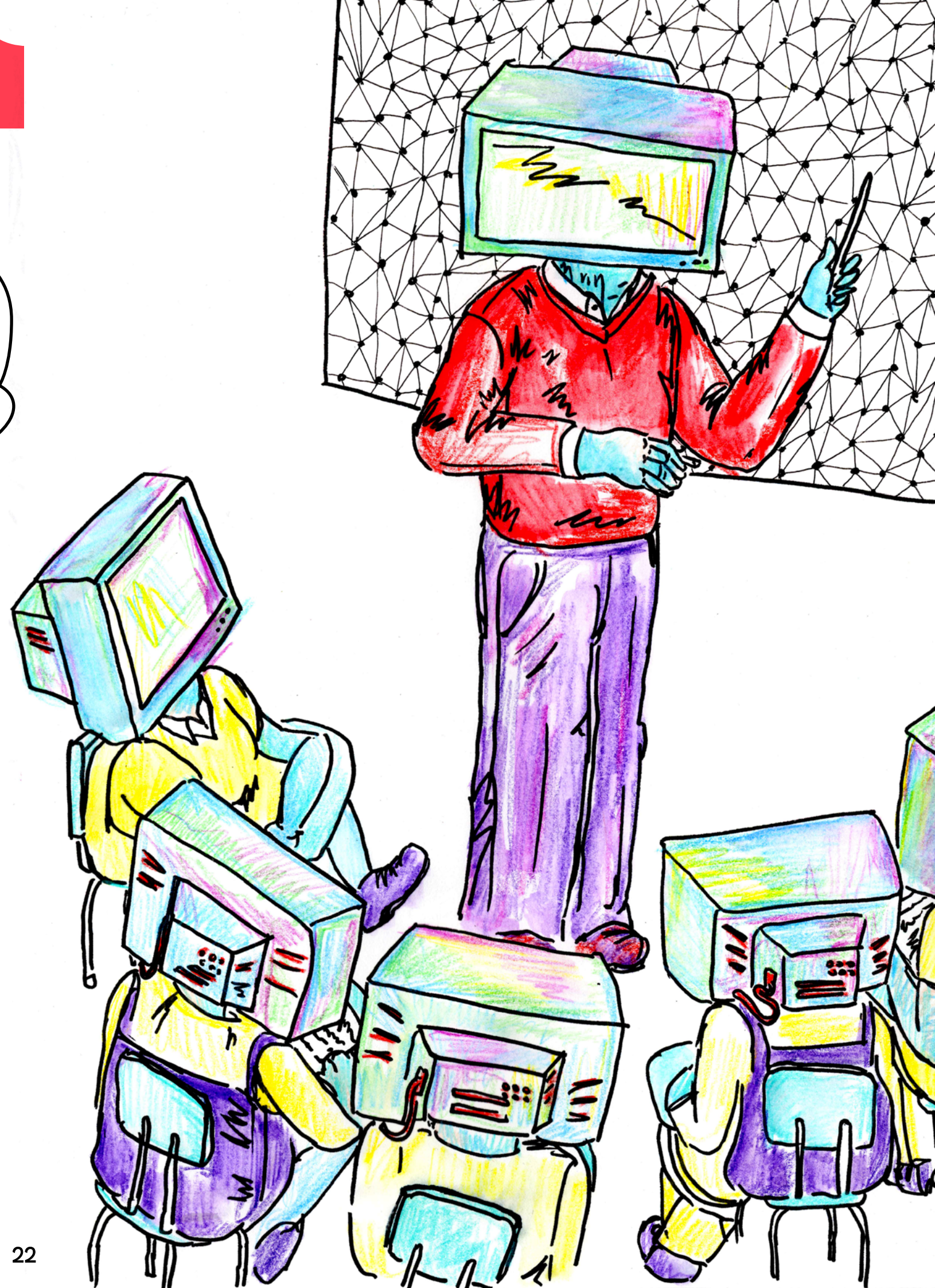
[This definition is often attri-
buted to Samuel, who coined the
term ‘machine learning’, but this is
not found verbatim in this publica-
tion, and may be a paraphrase that
appeared later.]”

DAVID D. LUXTON

*"Artificial Intelligence in
Behavioral and Mental
Health Care"*

ELSEVIER/ACADEMIC PRESS
[SCIENCEDIRECT.COM](https://www.sciencedirect.com)
2016

“Essentially, ML is the capa-
bility of software or a machine to
improve the performance of tasks
through exposure to data and ex-



perience. A typical ML model first learns the knowledge from the data it is exposed to and then applies this knowledge to provide predictions about emerging (future) data.”

JORY DENNY

“What is an Algorithm? How Computers Know What to do with Data”

THECONVERSATION.COM

2020

“A special category of algorithms, machine learning algorithms, try to “learn” based on a set of past decision-making examples. Machine learning is commonplace for things like recommendations, predictions and looking up information.”

SIJI ROY

“Machine Learning”

WEBOPEDIA.COM

2021

“Machine Learning (ML) is a sub-branch of Artificial Intelligence (AI) that enables computers to learn, adapt, and perform the desired functions on their own. ML algorithms can learn patterns from the previous input and results and adjust tasks

accordingly. Machine learning can be categorized in one of three major ways.

| Supervised Learning:

Uses labeled data that includes inputs and rectified outputs to train models.

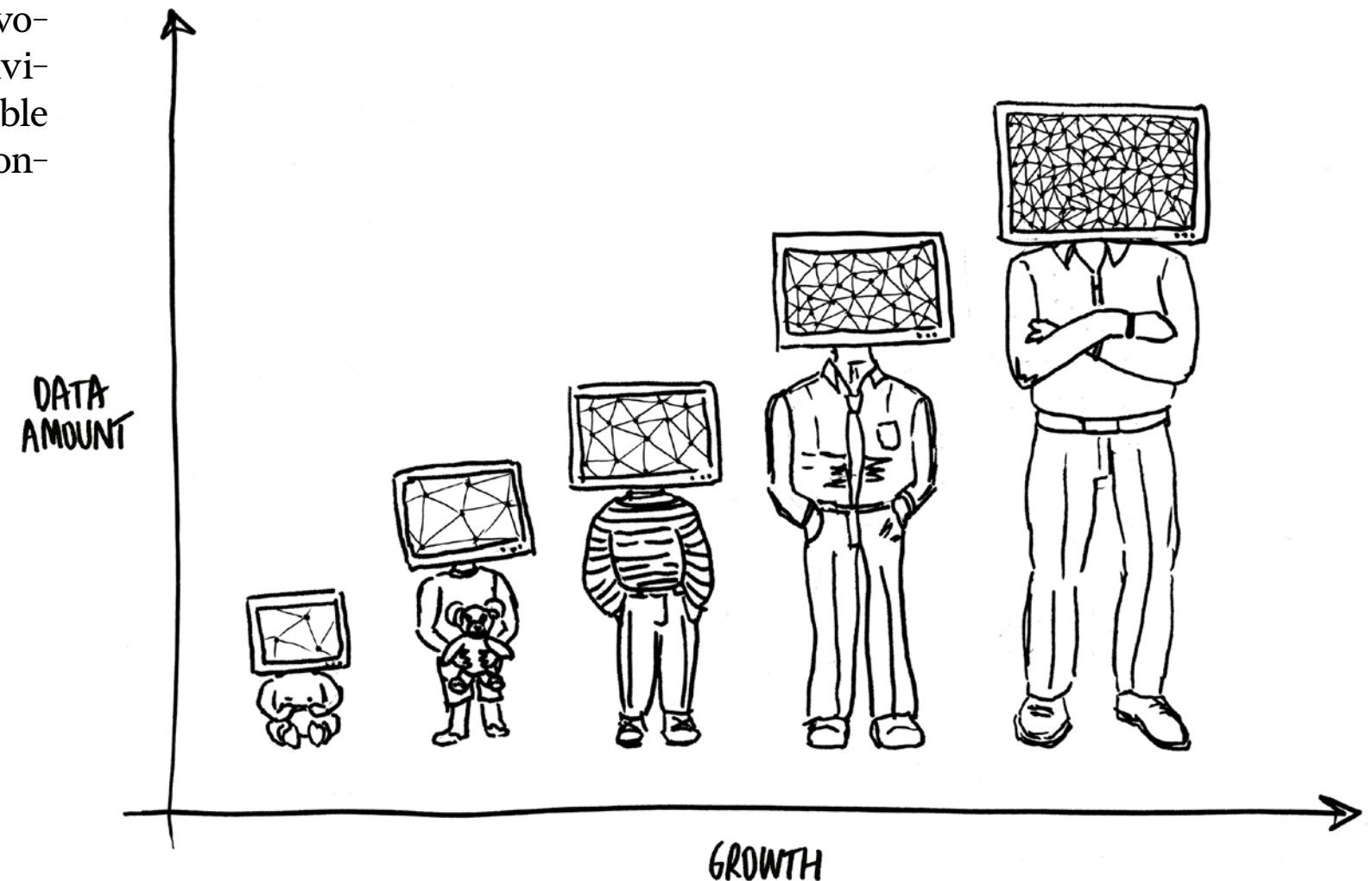
| Unsupervised Learning:

Uses unlabeled data to train models in which the output variable is unknown. Therefore, the models need to learn from the data, discover patterns, and provide the desired output.

| In Reinforcement Learning,

algorithms need to learn from their environment, like human beings. It gets favorable or unfavorable rewards based on the environment.favorable or unfavorable rewards based on the environment.”

**“Essentially,
Machine Learning is
the capability of software
or a machine to improve
the performance of tasks
through exposure
to data and experience”**



PREDICTIVE POLICING

**“A range of
policing practices
that claim to use
demographic,
environmental
and historic crime
data to predict
future patterns
of crime”**

STOP LAPD
SPYING COALITION

*“Dismantling Predictive
Policing in Los Angeles”*
STOPLAPDSPYING.ORG
2018

“Predictive Policing refers to a range of policing practices that claim to use demographic, environmental and historic crime data to predict future patterns of crime as well as presuming “where will the crime occur”, and “who” will commit the crime. Predictive policing can be better understood within the broader creep of data-surveillance on the part of law-enforcement.”

RUHA BENJAMIN

*“Race after Technology:
Abolitionist Tools
for the New Jim Code”*
RUHABENJAMIN.COM
2019

“At a recent workshop sponsored by a grass-roots organization called Stop LAPD Spying, the facilitator explained that community members with whom she works might not know what algorithms are, but they know what it feels like to be watched.

Feelings and stories of being surveilled are a form of ‘evidence’, she insisted, and community testimony is data. As part of producing those data, the organizers interviewed people about their experiences with surveillance and their views on predictive policing. They are asked, for example: ‘What do you think the predictions are based on?’

One person, referring to the neighborhood I grew up in, responded: | ‘Because they over-patrol certain areas – if you’re only looking on Crenshaw and you only pulling Black people over then it’s only gonna make it look like, you know, whoever you pulled over or whoever you searched or whoever you criminalized that’s gonna be where you found something.’”



WIKIPEDIA

“Technology”

[EN.WIKIPEDIA.ORG](https://en.wikipedia.org)

“Technology is the result of accumulated knowledge and application of skills, methods, and processes used in industrial production and scientific research. [...] Technology means ‘science of craft’, from Greek τέχνη, techne, ‘art, skill, cunning of hand’; and -λογία, -logia.”

RUHA BENJAMIN

“Race after Technology:

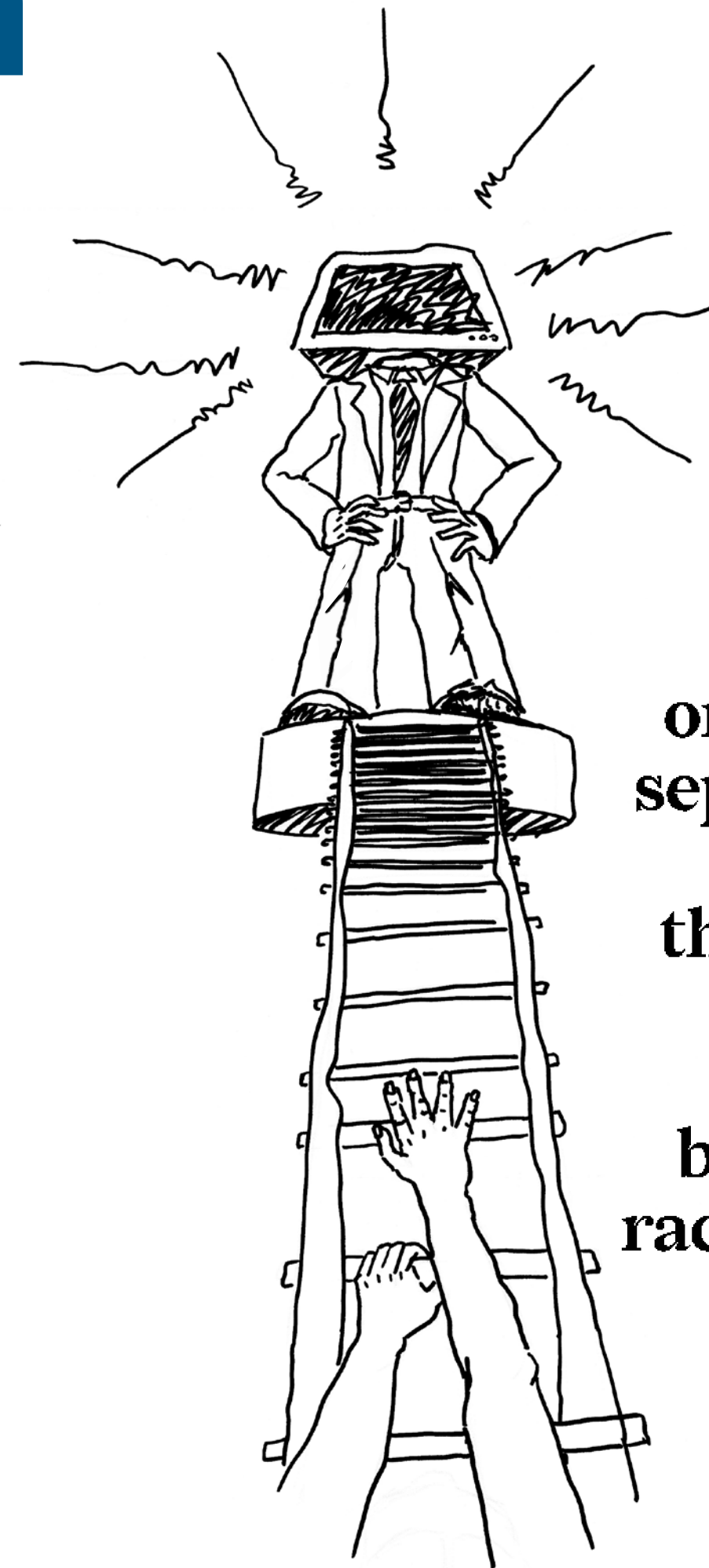
Abolitionist Tools

for the New Jim Code”

[RUHABENJAMIN.COM](https://ruhabinjamin.com)

2019

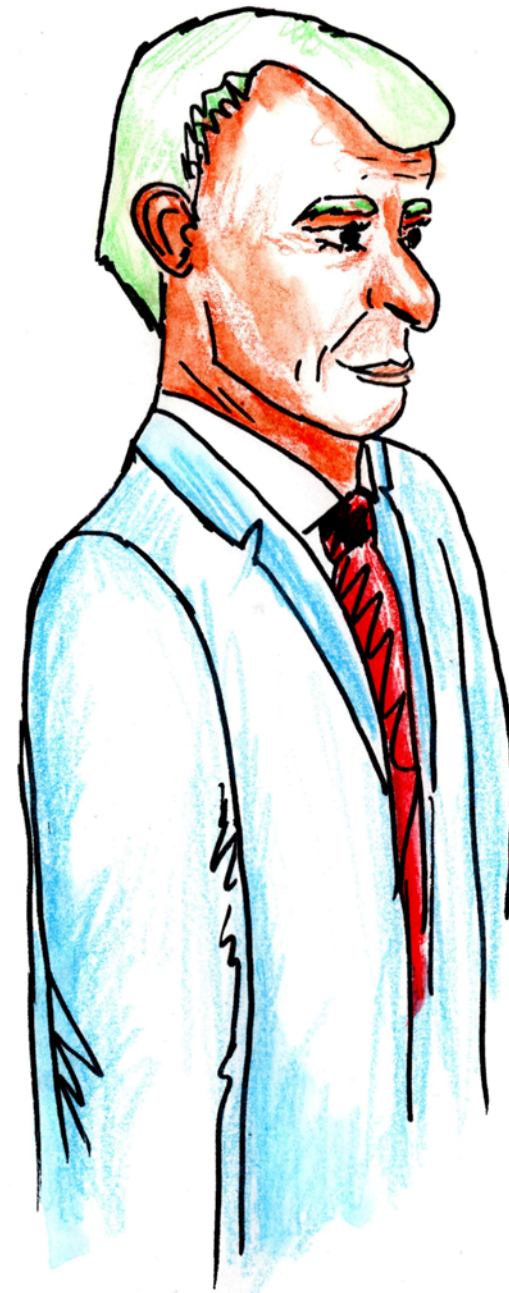
“This field guide explores not only how emerging technologies hide, speed up, or reinforce racism, but also how race itself is a kind of technology— one designed to separate, stratify, and sanctify the many forms of injustice experienced by members of racialized groups, but one that people routinely reimagine and redeploy to their own ends.”



**“Race itself
is a kind of
technology—
one designed to
separate, stratify,
and sanctify
the many forms
of injustice
experienced
by members of
racialized groups”**

GOVERNMENTS

ALSO
GOVERNMENTS



"WE NEED TO ACT
AGAINST CLIMATE
CHANGE NOW."

"LET'S LAUNCH
INSTA FILTERS!"

TECHNOLOGICAL
SOLUTIONISM
(TECH SOLUTIONISM,
SOLUTIONISM)

KERRY MAXWELL

"Technological Solutionism"

MACMILLANDICTIONARY.COM

2014

"The belief that every problem has a solution based in technology."

EVGENY MOROZOV

*"To Save Everything,
Click Here: The Folly of
Technological Solutionism.
First Edition"*

PUBLICAFFAIRSBOOKS.COM

2013

"Recasting all complex social situations either as neatly defined problems with definite, computable solutions or as transparent and self-evident processes that can be easily optimized—if only the right algorithms are in place!—this quest is likely to have unexpected consequences that could eventual-

ly cause more damage than the problems they seek to address.

I call the ideology that legitimizes and sanctions such aspirations 'solutionism.' I borrow this unabashedly pejorative term from the world of architecture and urban planning, where it has come to refer to an unhealthy preoccupation with sexy, monumental, and narrow-minded solutions—the kind of stuff that wows audiences at TED Conferences—to problems that are extremely complex, fluid, and contentious...

Design theorist Michael Dobbins has it right: solutionism presumes rather than investigates the problems that it is trying to solve, reaching 'for the answer before the questions have been fully asked.' How problems are composed matters every bit as much as how problems are resolved."

A

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