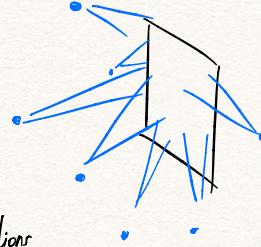# WAYS OF MACHINES SEEING

J. BERGER / W. BENJAMIN

We now look at paintings from perspectives _different_ from the original ones

people born
after the 1900

we reproduce art, thus there is
no more a single real point of view, but millions

once, there was a unique image in a real room

↳ everything around the image was part of the meaning

" The "cash value" of a painting
nowadays is just a _substitute_ of
what paintings lost when camera made them reproducible "

REPRODUCTION MAKES WORKS OF ART AMBIGUOUS

depending on the context

**NOWADAYS,
MACHINES "SEEING"**

- machine learning techniques employed on data are _inextricably bound to hegemonic systems of power and prejudice_

- altough machines are able to create _generalised models_ they're _highly contextual to their specific field_
  "a play of truth and falsehood"

- algorithms are starting to define
  what counts for knowledge, and we're unable to intervene in how such knowledge is produced

A FUTURE FOR INTERSECTIONAL BLACK FEMINIST TECHNOLOGY STUDIES

INTERSECTIONALITY → a framework for a deeper analysis of power and oppression _across multiple axes_

→ gender, race, class, ... all contribute to inequality/oppression

RACIAL IDENTITY AND THE WESTERN INTERNET

- many studies concerning the potentials of internet for activism, media making and culture are generally focused on the US context

  ↳ in particular, white supremacy is the main framework that structures researches in this field

  ↓

  The "default identity" of an internet user is [white, male, christian, middle class, heterosexual

  and that's because designers, policy makers, content providers bring their own racial frames → marginalising women and people of color

BLACK FEMINISM

internet tech structures detrimental narratives about Black life

is now used as a theoretical framework for thinking about Black women's representation and engagement online

and misrepresentation

THINKS ABOUT : how both gender and race are constituted through political historical processes economic

THE INTERSECTIONAL INTERNET INFRASTRUCTURE

- **Materiality** of internet : it is not material or abstract, nor <u>neutral</u>

  "neocolonialism" fuels extraction industries in all Africa

  the **COLTAN** mineral is the base of all of electronic components,
  and 3-5 million people were killed for the control of its minerary places

  The wealth of Silicon Valley is possible just for a few,
  and it's fueled by an invisible labor force of immigrants

  wealth and power are **relational**, they are derived
  from the exploitation of other social groups

  low wages, contamined environments

  Ghana is hosting most
  of the e-waste of the West

A FUTURE FOR INTERSECTIONAL
BLACK FEMINIST TECHNOLOGY STUDIES

- An interest in how capital is organised at the expense
  of Black life is essential in the intersectional studies

  in order to intervene in the conditions that cause oppression

- Rendering visible
  the sexism and racism in the social structures of the digital media

- Keep feminist pressure on the development of technologies

HOW WE'RE TEACHING COMPUTERS
TO UNDERSTAND PICTURES

- VISION STARTS FROM THE EYES BUT HAPPENS IN THE BRAIN

- MACHINES CANNOT LEARN THROUGH <u>SIMPLIFIED SHAPES</u> OF REAL OBJECTS / PEOPLE / ETC...

STEP 1
- THE BEST APPROACH IS TO FEED A HUGE NUMBER OF LABELED IMAGES AND USE A

IMAGE NET → CONVOLUTIONAL
(big data)   NEURAL NETWORK
                 (deep learning)

STEP 2
- USE IMAGES WITH LABELED CONTEXT DESCRIPTIONS

A cat ⟶ A cat standing on a bed near a laptop

1. RESEARCH 2 EXAMPLES OF MACHINES SEEING

2. DRAWING ON THE TWO READINGS CONSIDER YOUR EXAMPLE IN RELATION TO "WAYS OF MACHINES SEEING"

3. EXPLORE WHAT A BLACK INTERSECTIONAL ANALYSIS OF YOUR EXAMPLE MAKES VISIBLE

EX 1

https://motherboard.vice.com/en_us/article/78k7de/why-an-ai-judged-beauty-contest-picked-nearly-all-white-winners

EX 2
http://www.bbc.co.uk/news/technology-33347866

https://www.wired.com/story/when-it-comes-to-gorillas-google-photos-remains-blind/

EXAMPLE 1 : BEAUTY. AI

WHAT : The first international beauty contest judged by an AI (MICROSOFT, NVIDIA, MOSCOW TECH INSTITUTE, ...)

People from all around the world sent their images through the mobile apps.

MACHINES SEEING : The algorithms evaluates a beauty score based on parameters as   face symmetry   wrinkles

Fact is that only one finalist had dark skin,   young / old appearance

and just 6 were asians, out of the total 44 judged attractive.

This is caused by the lack of adequate representation of black /asians people

in the databases used by the researchers to train the algorithms.

Also, the majority (75%) of attendees were white Europeans.

This clearly shows how the premise of a generalised model capable of judging

beauty in the broadest sense possible is not really satisfied and once again

the whole training process is very bound to the cultural nieche that is responsible

of its creation.

Even if the model was not trained to judge on skin color, the lack of training data

shifted its preferences towards white european people, which also were present in

the largest amount in the submissions.

Once again, this shows the invisible frameworks on which part of the internet is based, the main one being the default supposed identity of its users.

This issue was also enforced by the small amount of attendees from non european country, partly due to "a lack of PR" for the event in those places.

I think that this contest is the perfect example of how Internet is not a neutral tool at all, and how even the most abstract, unpolitical and unbiased approach towards the resolution of whatever kind of problem will always be tied to the context of the original creators. They hadn't (hopefully) any discriminatory tendency in their assumptions, but the materiality of their corpus of data brought them to the creation of a very biased algorithm : this is the latent skeleton of the internet.

EXAMPLE 2 : GOOGLE PHOTOS GORILLAS

WHAT : Google's own algorithm for the automatic tagging of it's users photos labeled a picture of a black guy with his girlfriend in the "gorillas" album. Three years later, the problem is not really fixed : they just removed gorillas and chimpanzees from the service's lexicon.

MACHINES SEEING : Another clear example of what the lack of training data can create.

I think that the most impressive thing about this event is the fact that Google was not able to find a real fix for this problem and instead just opted for a goofy patch.

This shows how little control we have over the creation of this kind of "knowledge machines". Not even the researchers and developers have this power, they rely mostly on the quality and diversity of the training data. A supposedly generalised model - capable of labeling many difficult edge cases - is not able to correctly distinguish black people faces, falling back to a broader category of subjects : gorillas. The only way to correct such a misclassification error is to have more specific training data.

As in the previous example, researchers didn't have any real racial bias in their culture, is just that the academic research environment in which they operate lacks the needed diversity, and this is reflected in their image datasets.

The most difficult thing that those kind of seeing machines will have to overcome is their bound to a specific context, and this can only be realised by integrating the ethnic minorities into the actual research and development of those algorithms. We need as much as diversity as possible in the places where those kind of technological improvements happen: in this way we'll achieve better models and reduce the neocolonialist approach of the "western" internet.

(MY HANDS
HURTS,
EXCUSE THE
CALLIGRAPHY !)