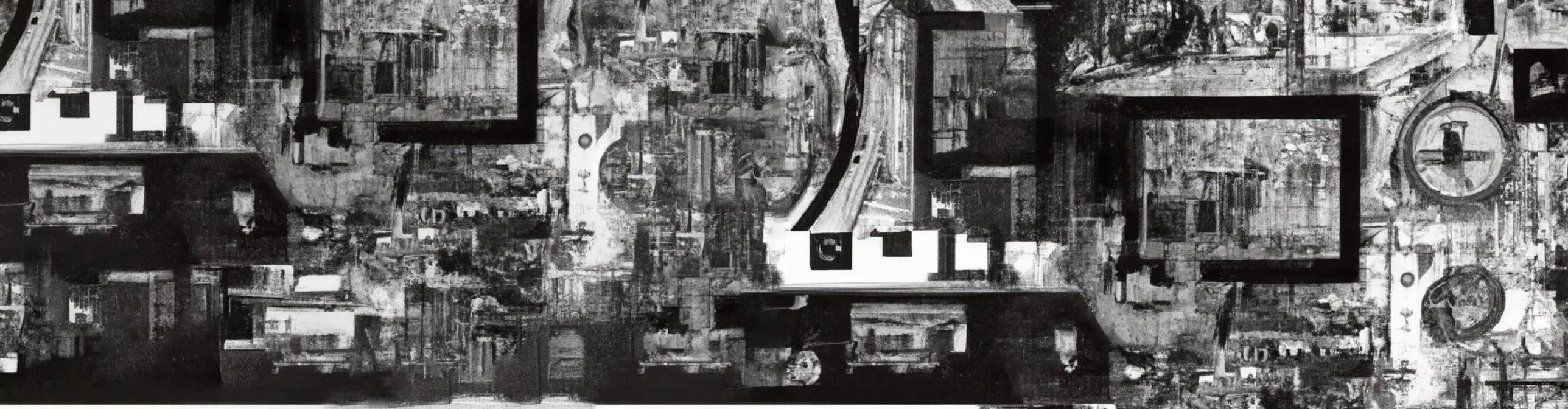


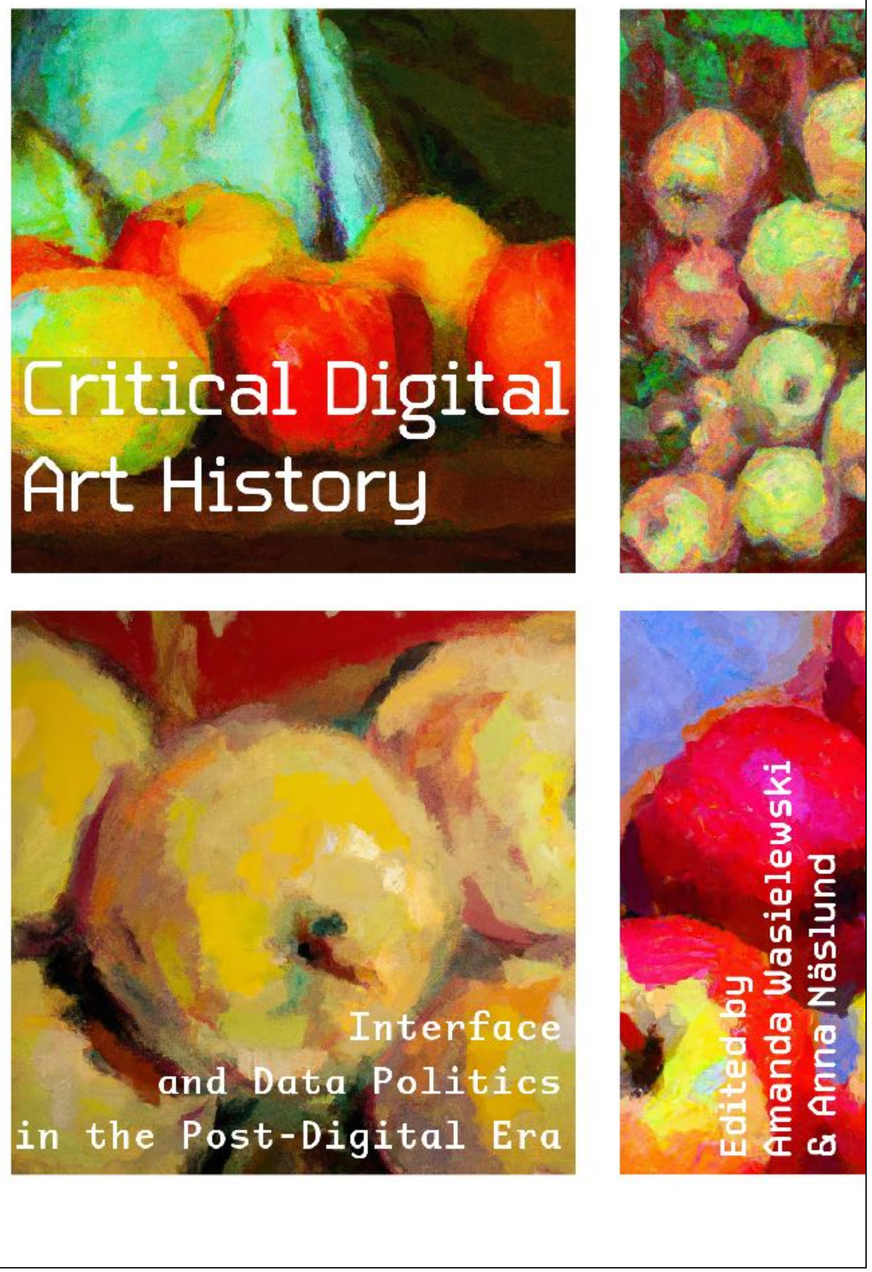
New Models for Art: Machine Epistemologies

Gothenburg University
Feb. 2024

Amanda Wasielewski, Associate Senior Lecturer Digital Humanities, Docent Art History, Institutionen för ABM amanda.wasielewski@abm.uu.se

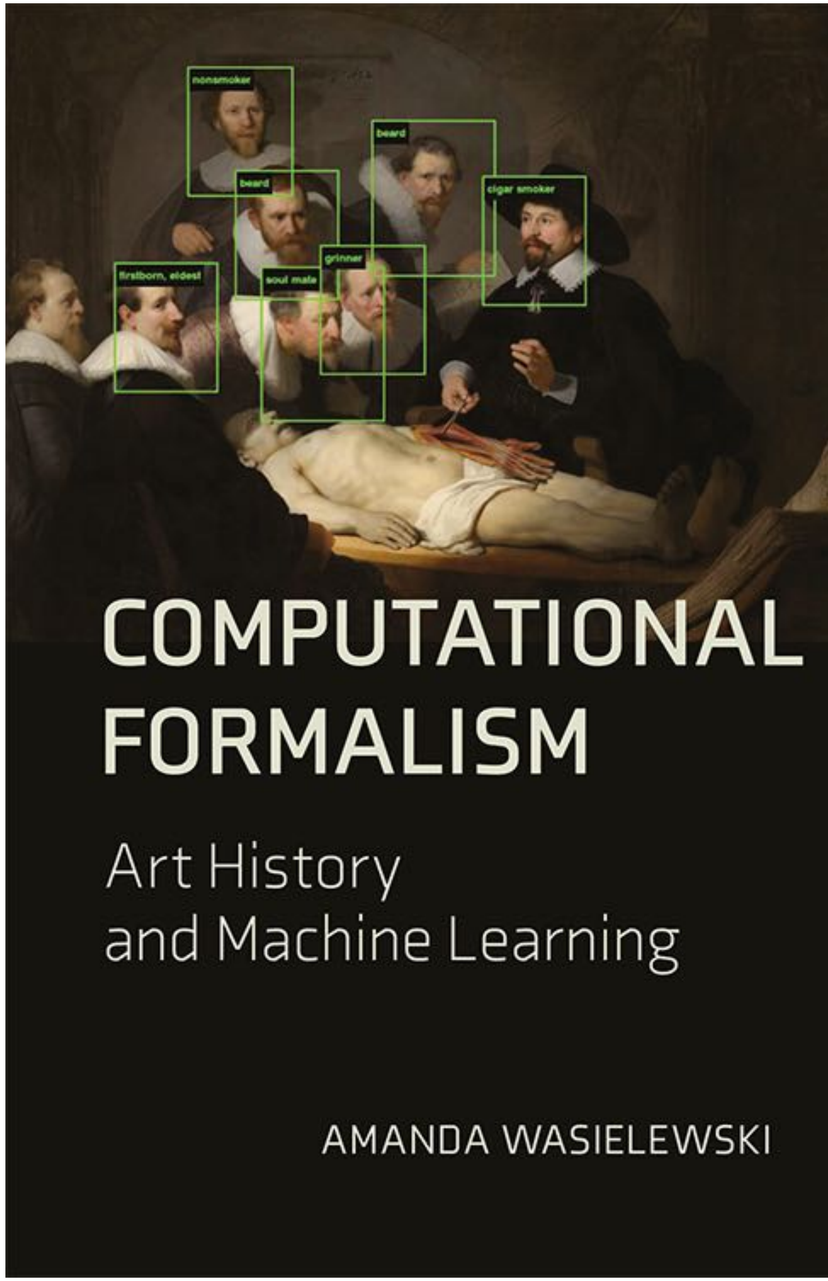
Outline

- Introduction — How to explain pictures?
- Computational Formalism and Classification
- Reversing the classification process: Text-to-Image generators
- Tank classifier problem - foreground/background
- Issues of space, figure/ground
- Generative AI and photography: ontological issues



“Critical Digital Art History: An Introduction.” In Critical Digital Art History.

“Zombie Canon: Art datasets, generative AI, and the reanimation of the western canon of art.” In Critical Digital Art History.



Intellect, November 22, 2024

Recent and forthcoming publications

- “Unnatural Images: On AI-Generated Photographs.” Critical Inquiry (Forthcoming August 2024)
- “How to Explain Pictures to a Dead Hare: Computer Vision and the Art Theory of Joseph Beuys” Artificial Intelligence and Art History: Looking at Pictures in an Algorithmic Culture Proceedings of the British Academy (Forthcoming tbd)
- “DALL-E in Flatland: Illusion, Space, and AI-Generated Images.” Media and Society (Forthcoming 2024)
- “The Latent Objective World: Photography and the Real after Generative AI.” Chapter in Virtual Photography (Forthcoming 2025)
- “The Reification of Style in AI Image Generation.” Hertziana Studies in Art History Journal (Forthcoming Spring 2024)
- “Authenticity and the Poor Image in the Age of Deep Learning.” Photographies 16, no. 2 (May 4, 2023): 191–210. https://doi.org/10.1080/17540763.2023.2189158.
- “‘Midjourney Can’t Count’: Questions of Representation and Meaning for Text-to-Image Generators.” IMAGE: Zeitschrift Für Interdisziplinäre Bildwissenschaft 37, no. 1 (May 2023): 70–81.

DALL·E History Collections

A

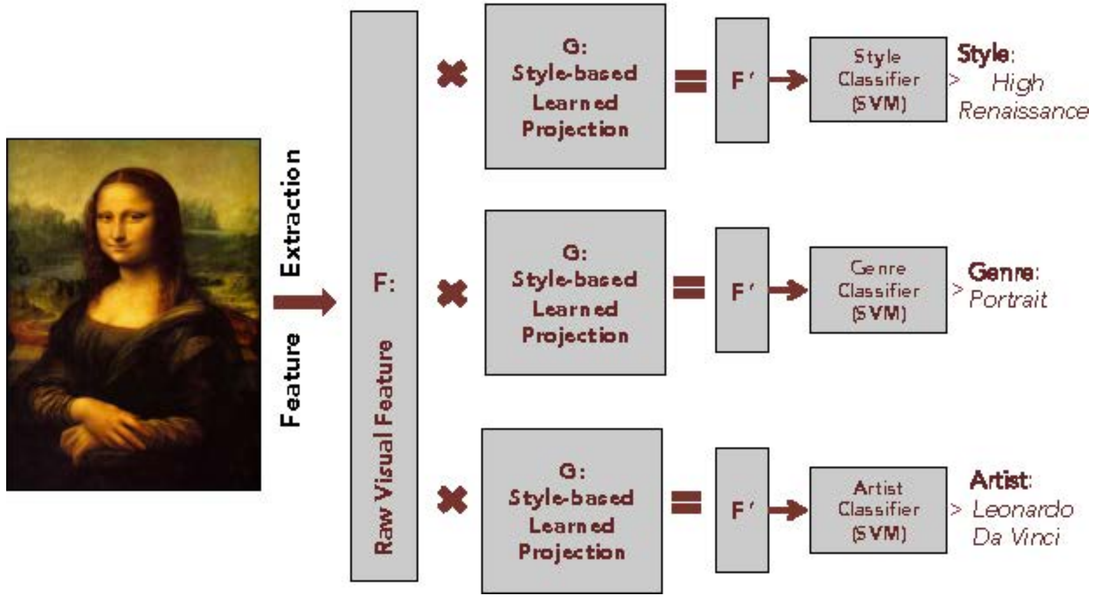
Start with a detailed description **Surprise me**

An Impressionist oil painting of sunflowers in a purple vase...

Generate

Or, upload an image to edit

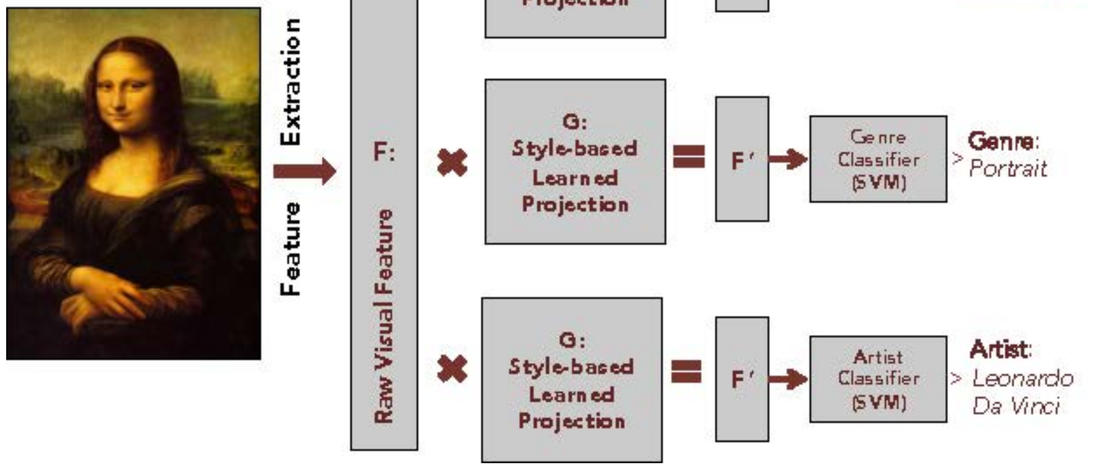
Style



Content or 'object'

Images: Babak Saleh and Ahmed Elgammal, "Large-Scale Classification…"; Nicolas Gonthier et. al., "Weakly supervised…"

Style

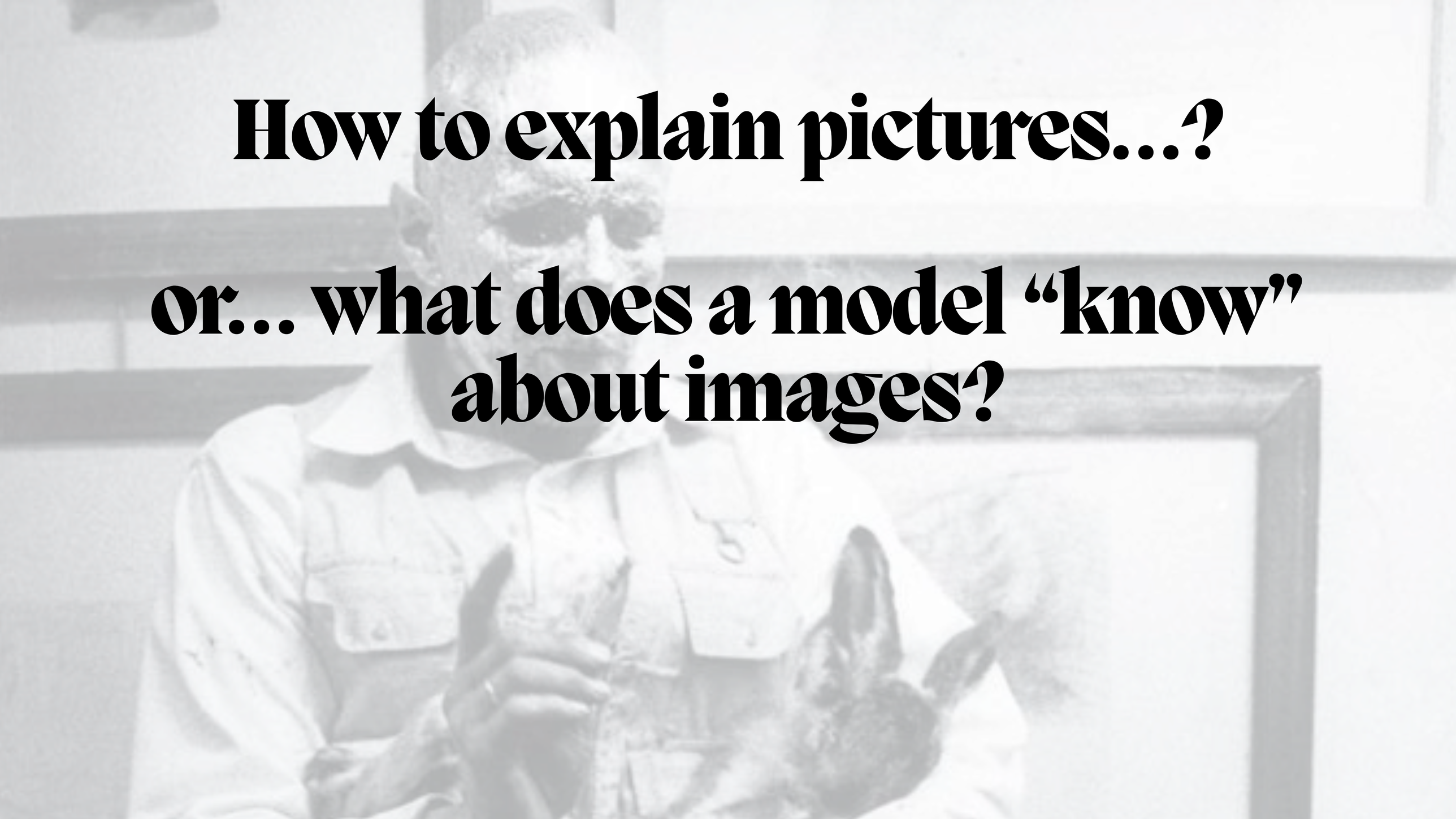


Content or 'object'

Images: Babak Saleh and Ahmed Elgammal, "Large-Scale Classification…"; Nicolas Gonthier et. al., "Weakly supervised…"

DALL-E 2,
“An Impressionist oil painting of sunflowers in a purple vase”

Joseph Beuys, *How to Explain Pictures to a Dead Hare (Wie man dem toten Hasen die Bilder erklärt)*, 1965



How to explain pictures…?

or… what does a model “know” about images?

DALL-E 2,
“An Impressionist oil painting of sunflowers in a purple vase”

DALL-E 2,
“An Impressionist oil painting”

DALL-E 2,
“An Impressionist oil painting”

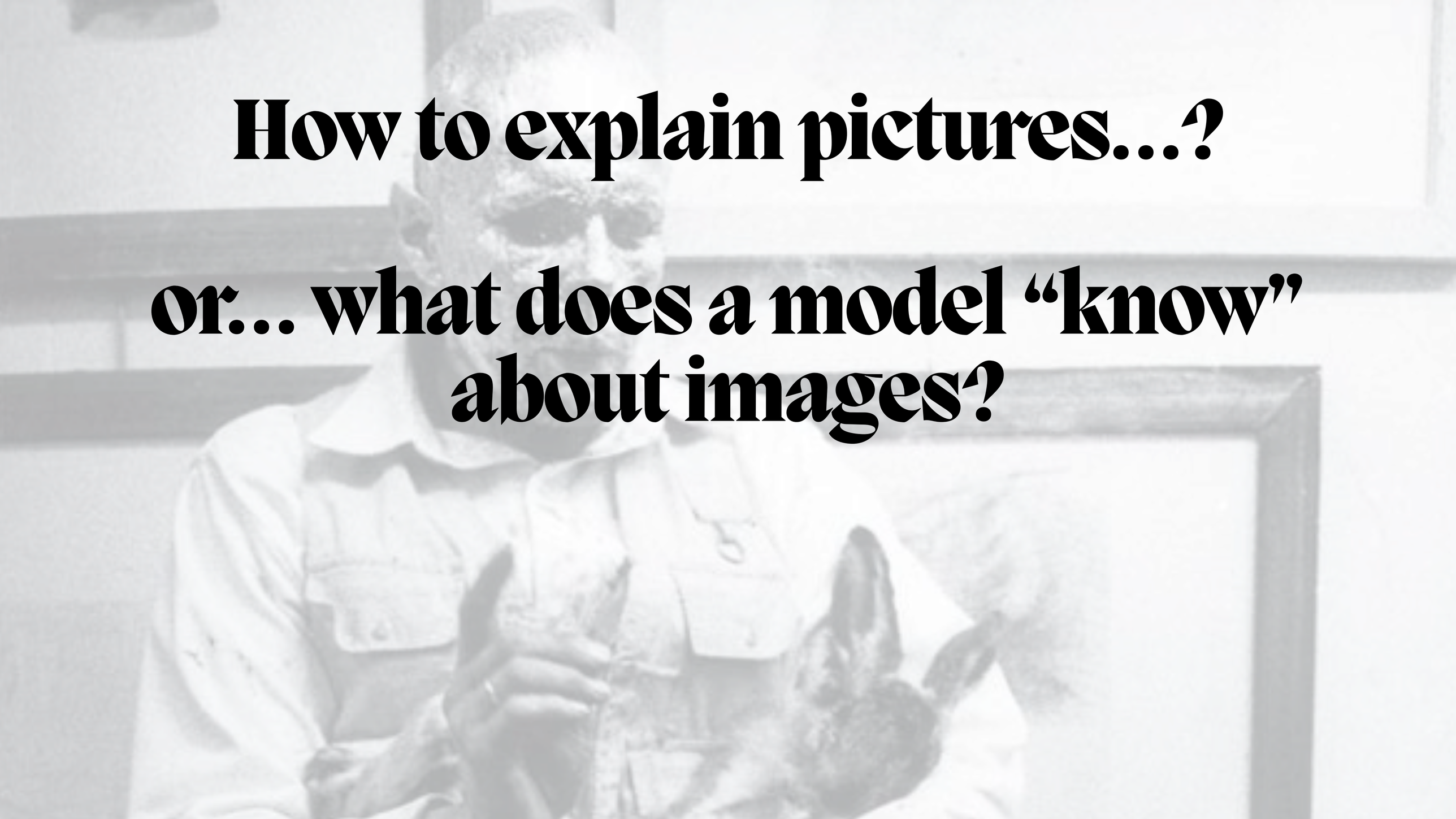
DALL-E 2,
“Impressionist”

What is style?

- Style vs. Form
- Classic art historical questions that have become increasingly important for generative AI applications
- What does the application of style in AI or machine learning do to this concept?

Cubism, Expressionism, Renaissance?

Vaporwave… claymation… ?



How to explain pictures…?

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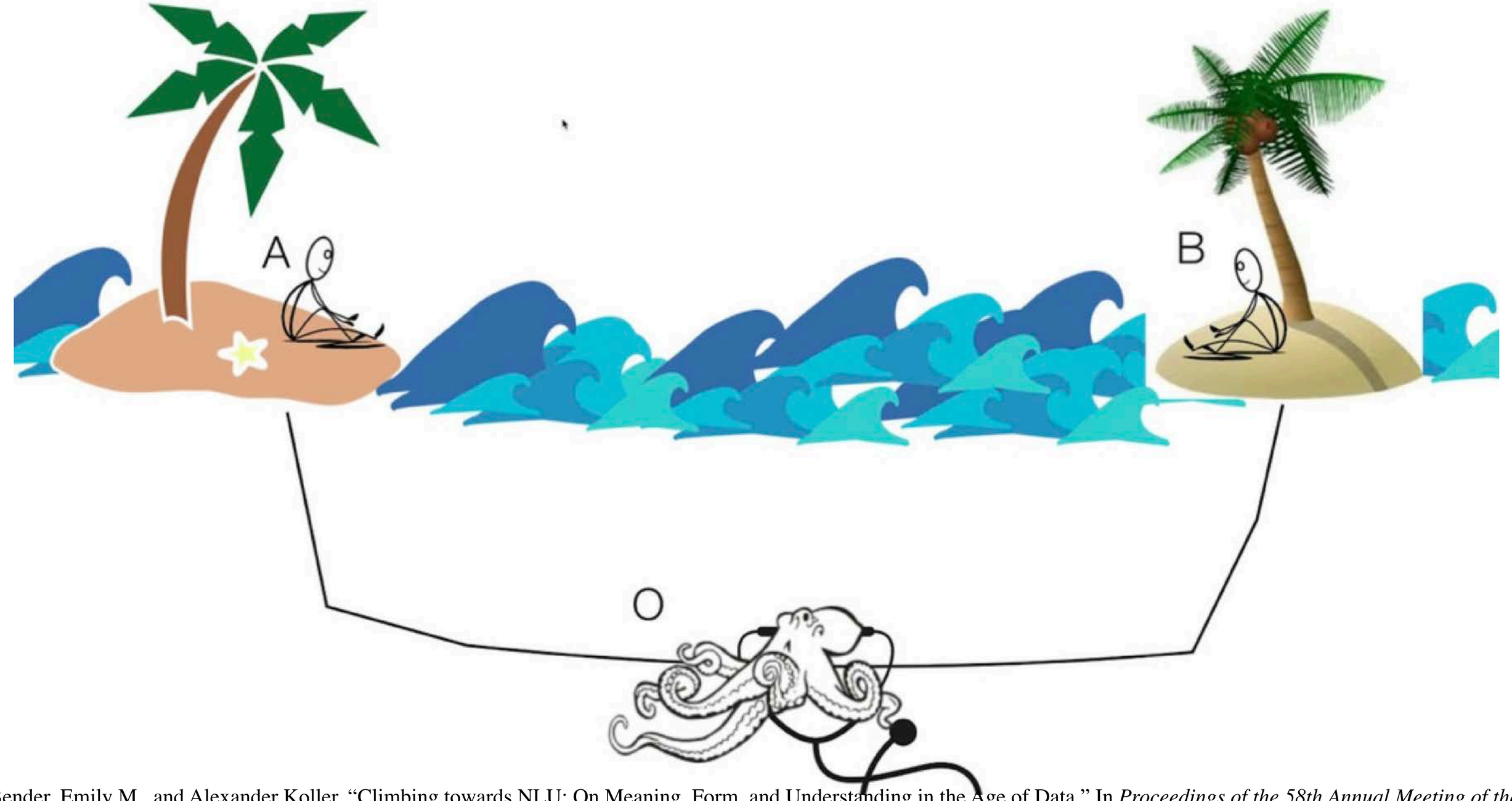


Bender, Emily M., and Alexander Koller. “Climbing towards NLU: On Meaning, Form, and Understanding in the Age of Data.” In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, 5185–98. Online: Association for Computational Linguistics, 2020. https://doi.org/10.18653/v1/2020.acl-main.463.

“We take form to be any observable realization of language: marks on a page, pixels or bytes in a digital representation of text, or movements of the articulators. We take meaning to be the relation between the form and something external to language…”

“We do not talk for the joy of moving our articulators, but in order to achieve some communicative intent.”

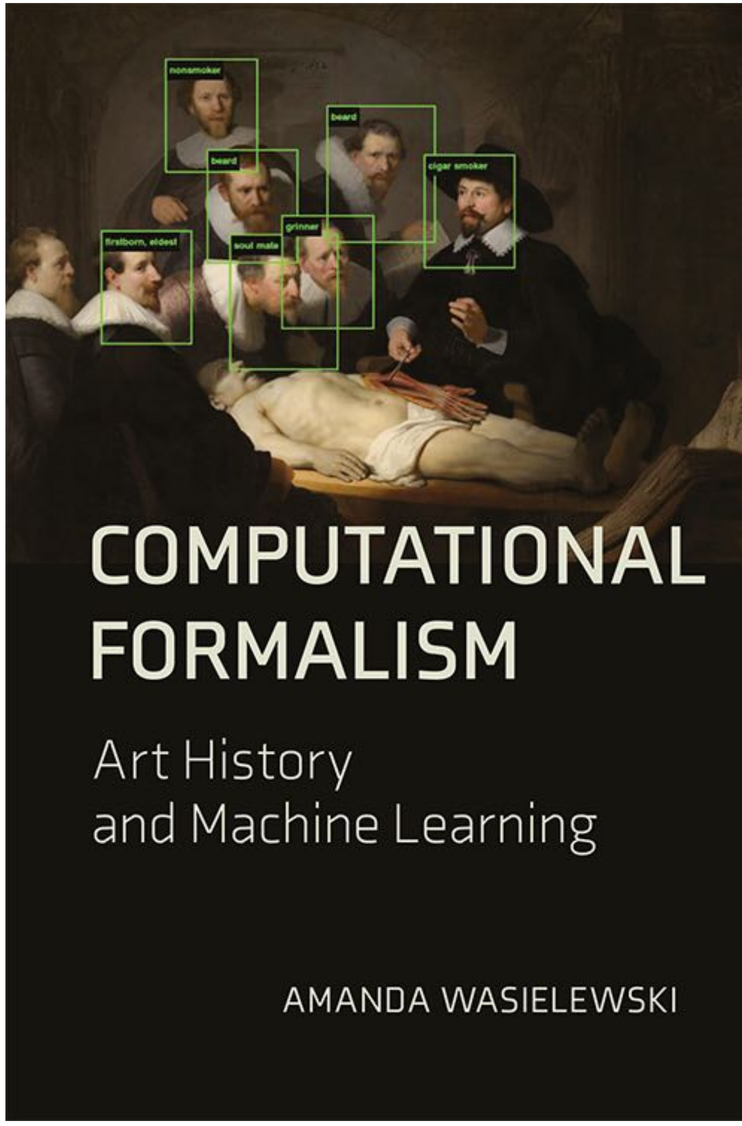
(5186-7)

Art theory: there is meaning inherent in form - not just what it communicates but in how it has a life on its own and autonomous (non-intent-based) development

Computational Formalism and Categorization via Machine Learning

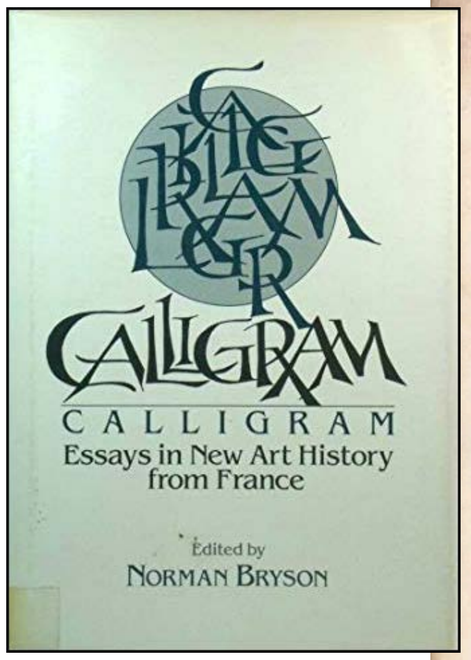
Computational Formalism: Art History and Machine Learning

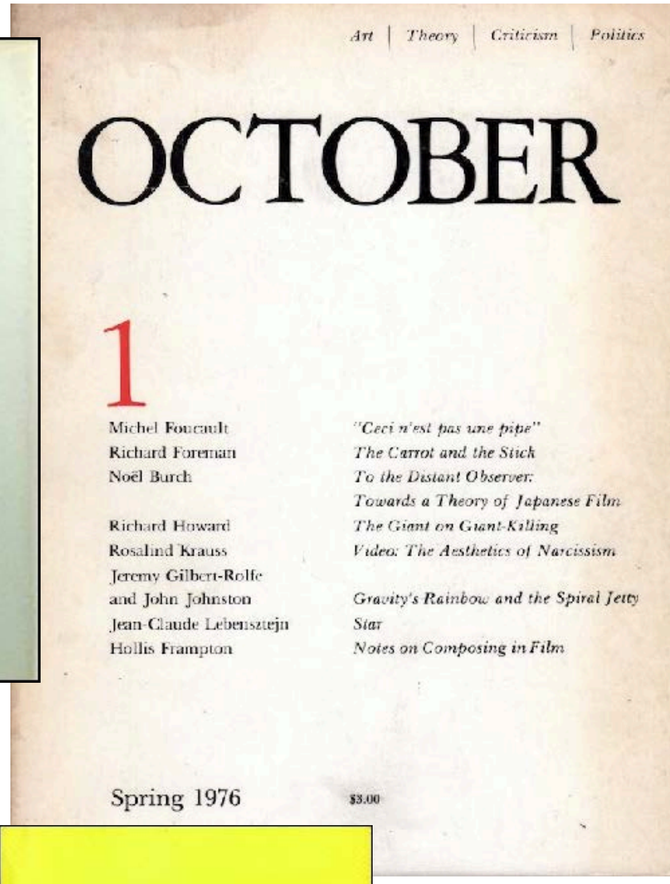
- Defining how machine learning tools have revived or revitalized traditional art historical methods, namely pure formalism
- Going to the source of digital humanities methods — dialogues between computer science and art history
  - Understanding research on art historical images from outside the field, i.e. in computer science research and commercial applications

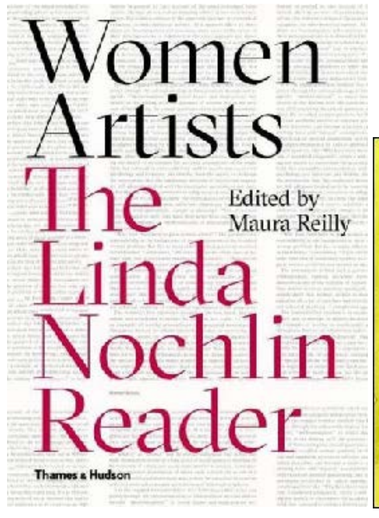


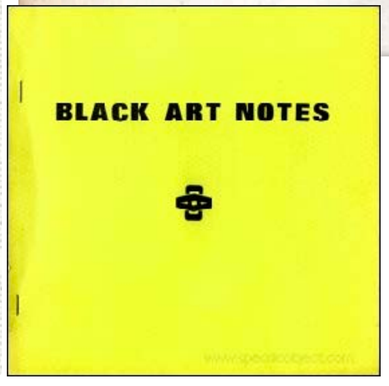
MIT Press, 2023

Form and Formalism: art historiography



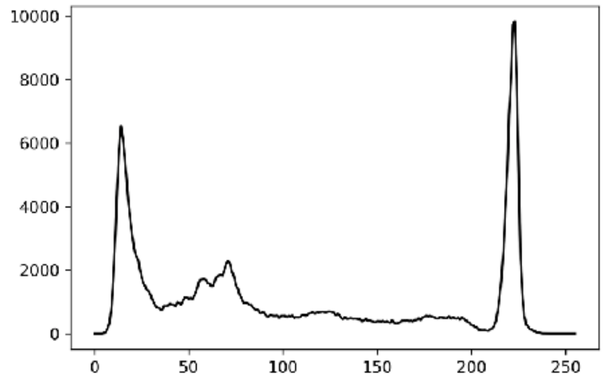


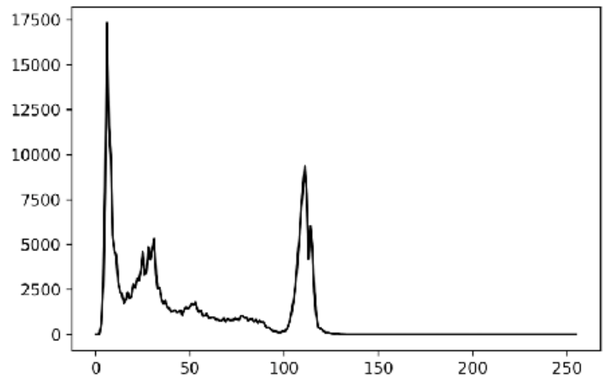


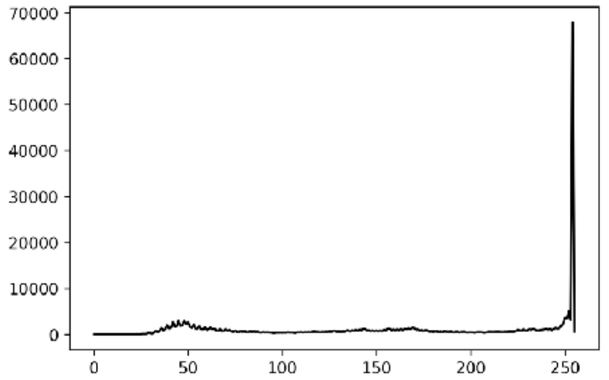


Computational Formalism

- Looks at external qualities of the work, comparing and classifying, creating taxonomic schema
- Mass comparison, relatively quickly
- Types of ‘form’ (i.e. features) analyzed/measured — the digital photograph as intermediary







Form vs. Style

“What formalism identifies as formed (or configured) will be specified in stylistic analysis as made (and sometimes deliberately stylized) by a particular agent who can be identified by that style.”

—Whitney Davis, A General Theory of Visual Culture (Princeton: Princeton University Press, 2011), 48.

Form vs. Style

Both Whitney Davis and Richard Neer (separately), say stylistic analysis indicates a **cause** for the particular arrangement or formal configuration of a work.

Thus, style must have a kind of intentionality, which raises questions for machine-produced style...

Can you 'read' an image?

"So what is an image if it is lost somewhere inside the machinations of photography and datasets and machine learning? Some decades ago, scholars could still respond by saying that images are like language"

Jussi Parikka, Operational Images: From the Visual to the Invisual, 2023, p.93

AI produced images (or texts) cannot be read

Formal pollution & corruption

Formal texture

Who produces meaning in art and visual culture?

The artist

Who produces meaning in art and visual culture?

The art historian:

“This is often all that is asked of an art historian: knowledge about the art of the past. The art historian is summoned to decode the symbolic messages and a account for forms, formats, and functions peculiar to the world that produced the work. The art historian clears it all away… gives you an unobstructed view.

I will tell you, however, that the art historian is the one who makes you see the carved relief again as a work of art.”

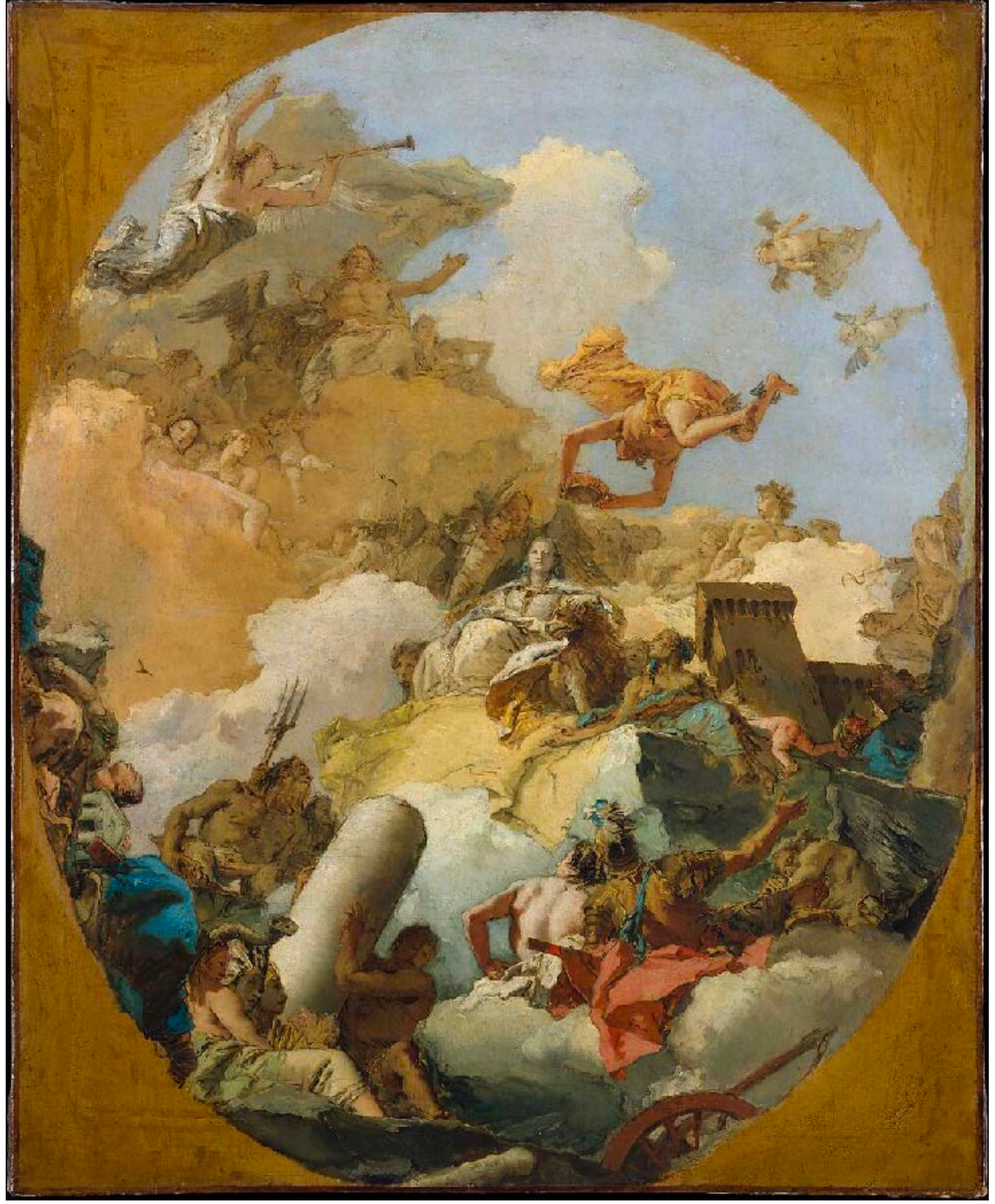
Christopher Wood, The History of Art History, 2019

Who produces meaning in art and visual culture?

The context:

"...saying something is baroque suggests nothing about its origins. . . . a fake Tiepolo is, potentially, just as baroque as a real one."

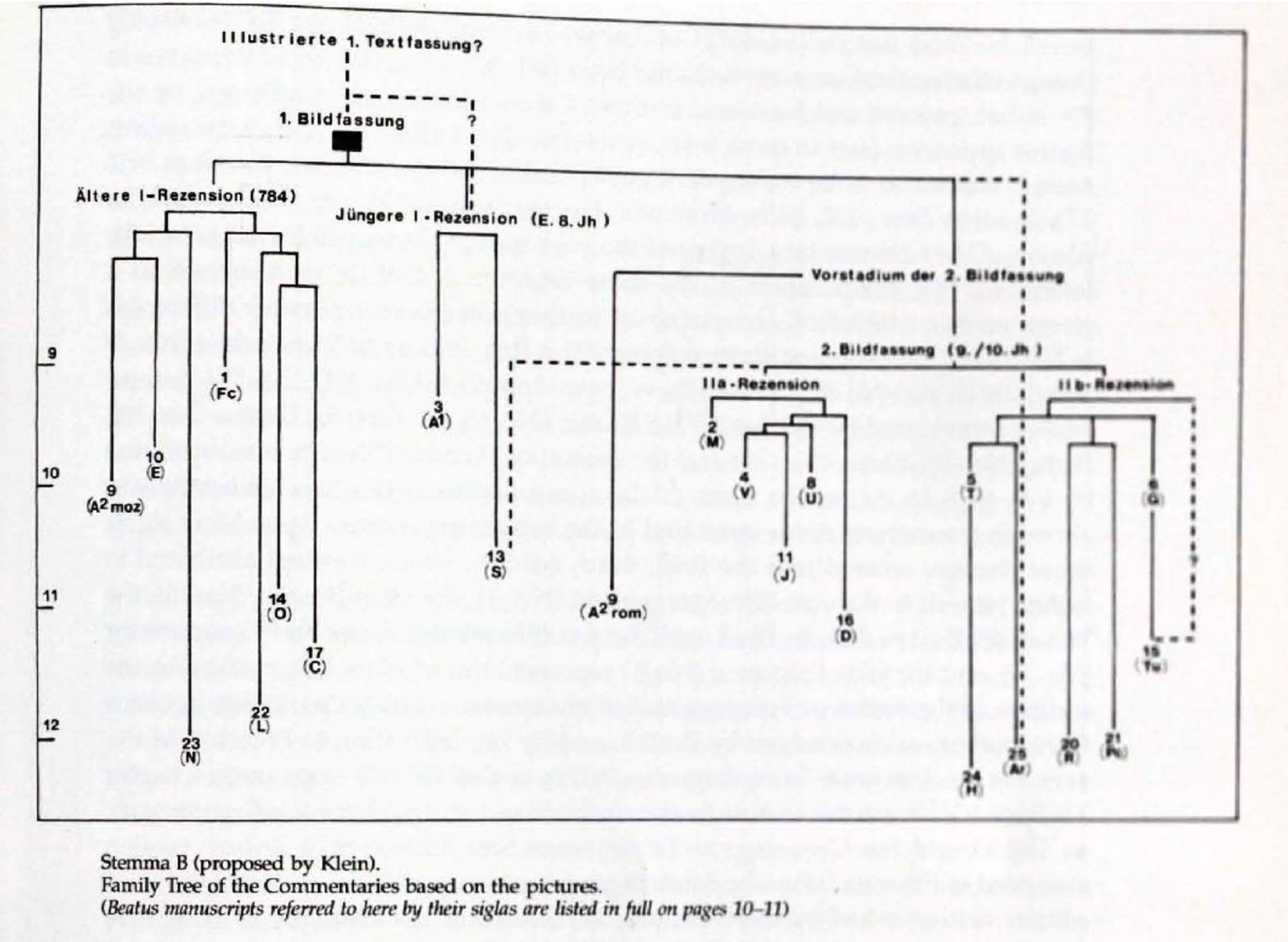
Richard Neer, "Connoisseurship and the Stakes of Style," Critical Inquiry 32, no. 1 (2005)



Giovanni Battista Tiepolo, The Apotheosis of the Spanish Monarchy, oil on canvas, 1760s

Midjourney, “a Baroque oil painting by Giovanni Battista Tiepolo depicting the Apotheosis of the Spanish Monarchy”, 18 April 2023

Style as relative quality



Stemma B (proposed by Klein).
Family Tree of the Commentaries based on the pictures.
(Beatus manuscripts referred to here by their siglas are listed in full on pages 10–11)

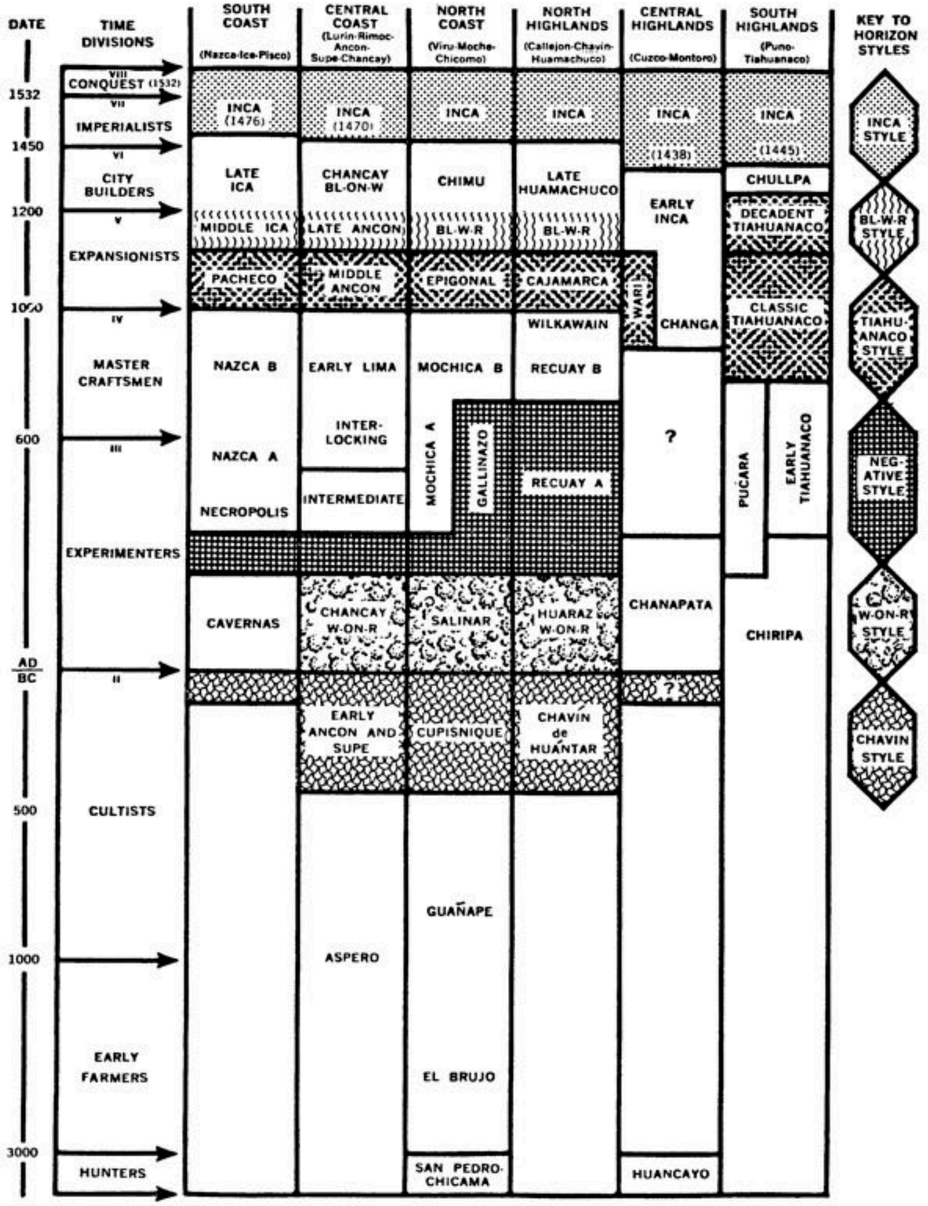


Fig. 2. Chronological chart for the Central Andes.
(Bennett and Bird, 1949)

Image: John Williams, *The Illustrated Beatus: A Corpus of the Illustrations of the Commentary on the Apocalypse*, vol. 2, 5 vols. (London; Langhorne, PA, U.S.A.: Harvey Miller Publishers, International Publishers Distributor, 1994); George Kubler, “Period, Style and Meaning in Ancient American Art,” New Literary History 1, no. 2 (1970): 134.

Style as objective fact

“In the first row is given a grayscale version of Jasper John’s Flag, a good representative of the pop art genre. We can see how the edge maps are almost the same for two extreme thresholds. In the second row we have Monet’s Sunset, and the edge maps that differ a lot according to the threshold. Machine learning techniques should be able to capture this rule and utilize it for classification.”

—Jana Zujovic et al., “Classifying Paintings by Artistic Genre: An Analysis of Features & Classifiers,” in 2009 IEEE International Workshop on Multimedia Signal Processing (IEEE, 2009), 1–5.

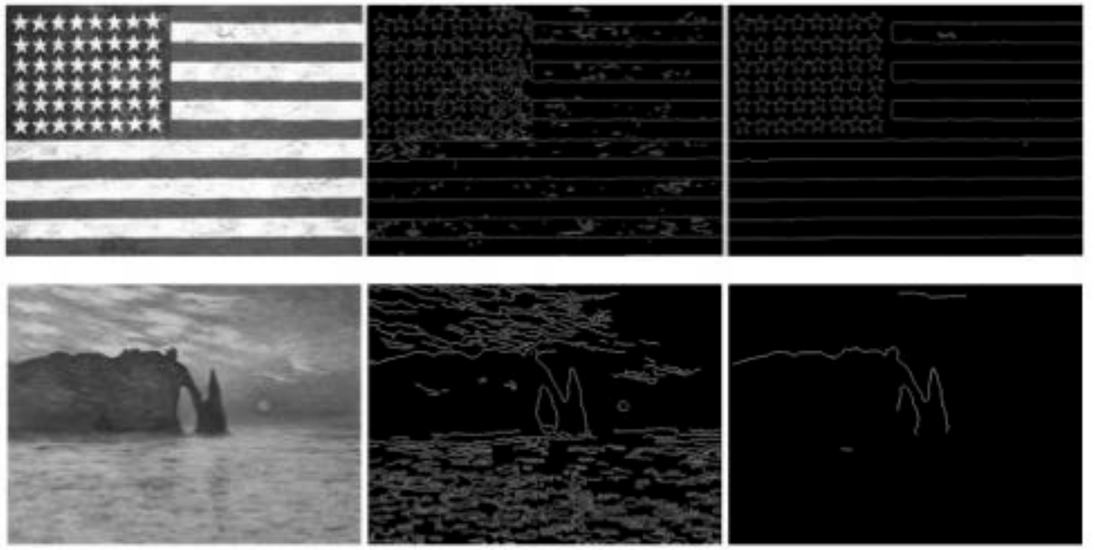


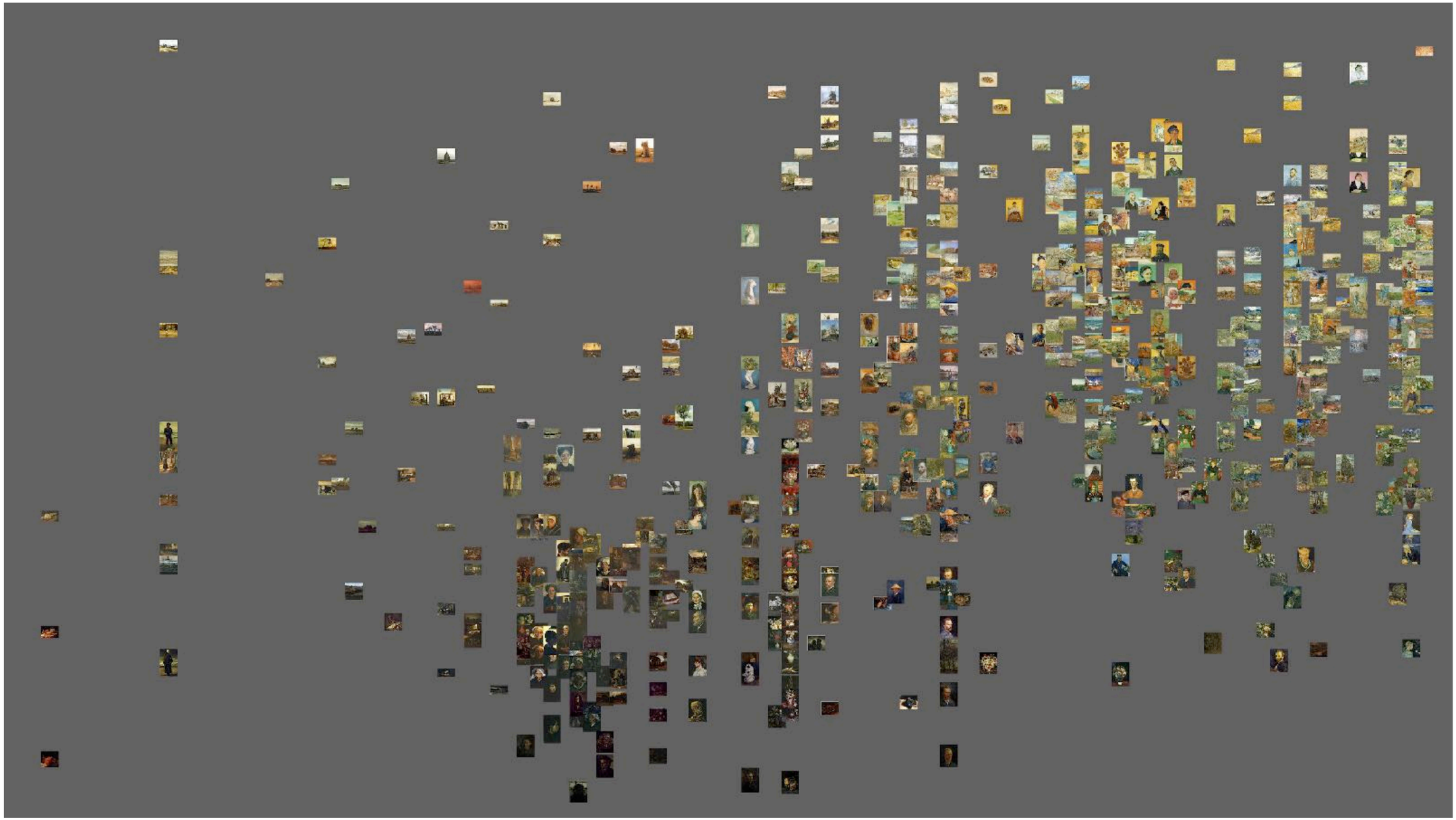
Fig. 2. Original grayscale images and edge maps for low and high thresholds

“Can we think without categories?”

“Why should we use computers to classify cultural artifacts, phenomena or activities into a small number of categories? Why not instead use computational methods to question the categories we already have, generate new ones, or create new cultural maps that relate cultural artifacts in original ways?”

Lev Manovich, 2015, 2018

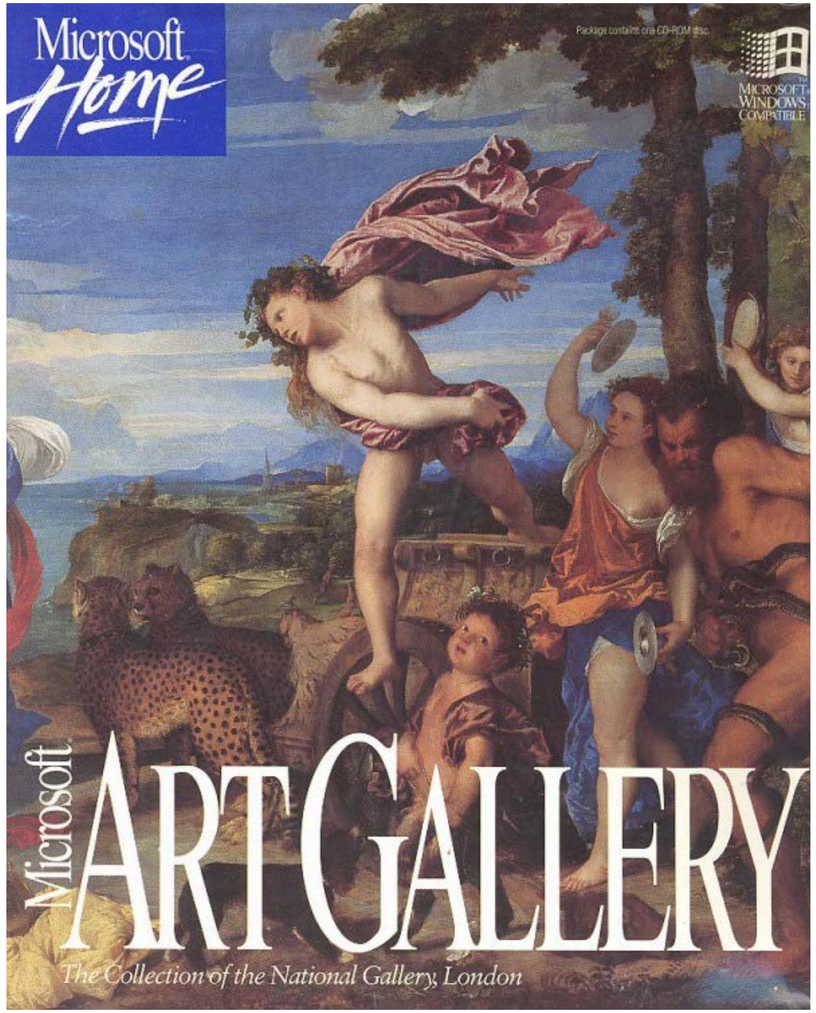
Lev Manovich, Style Space project, 2011

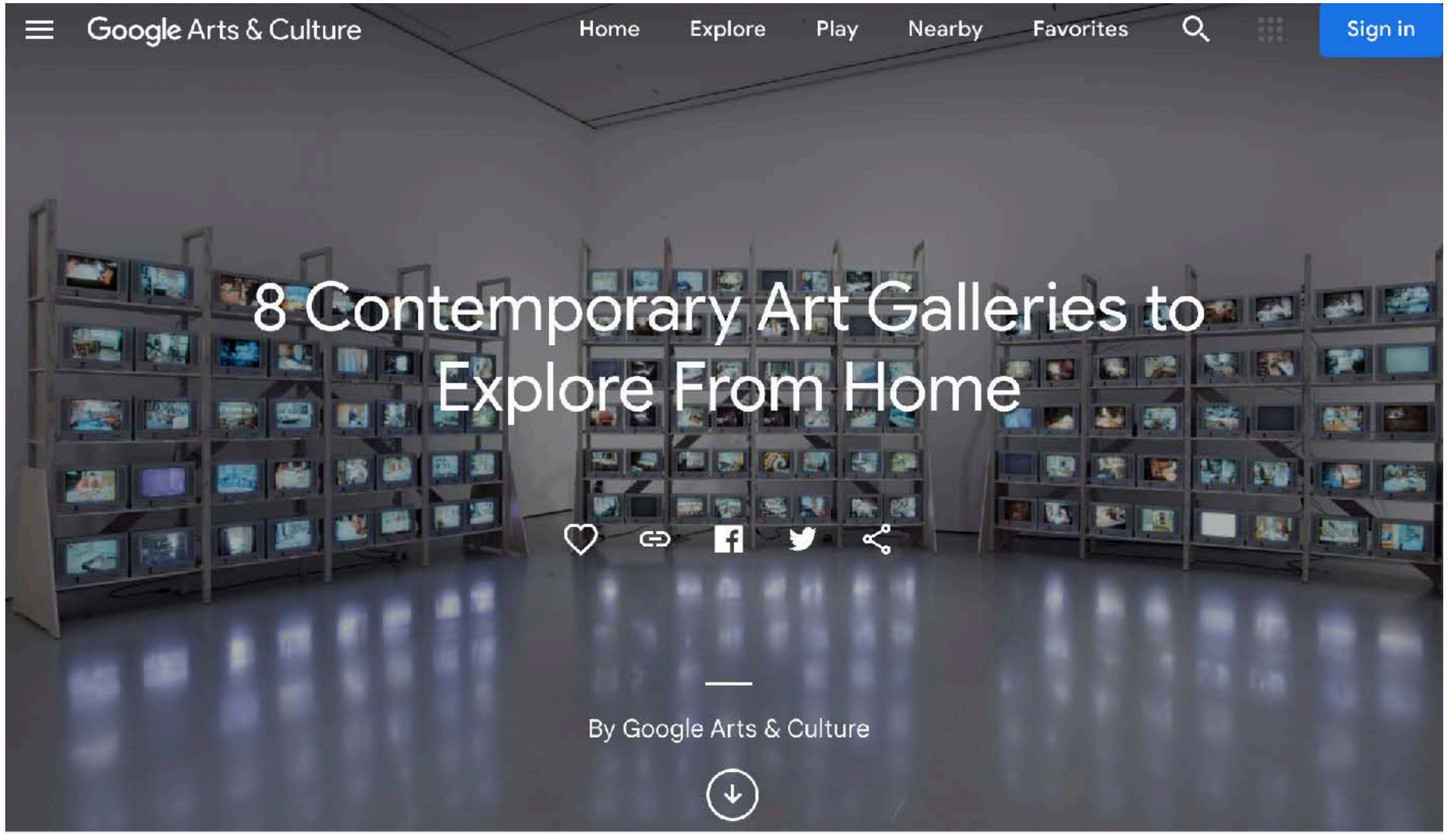


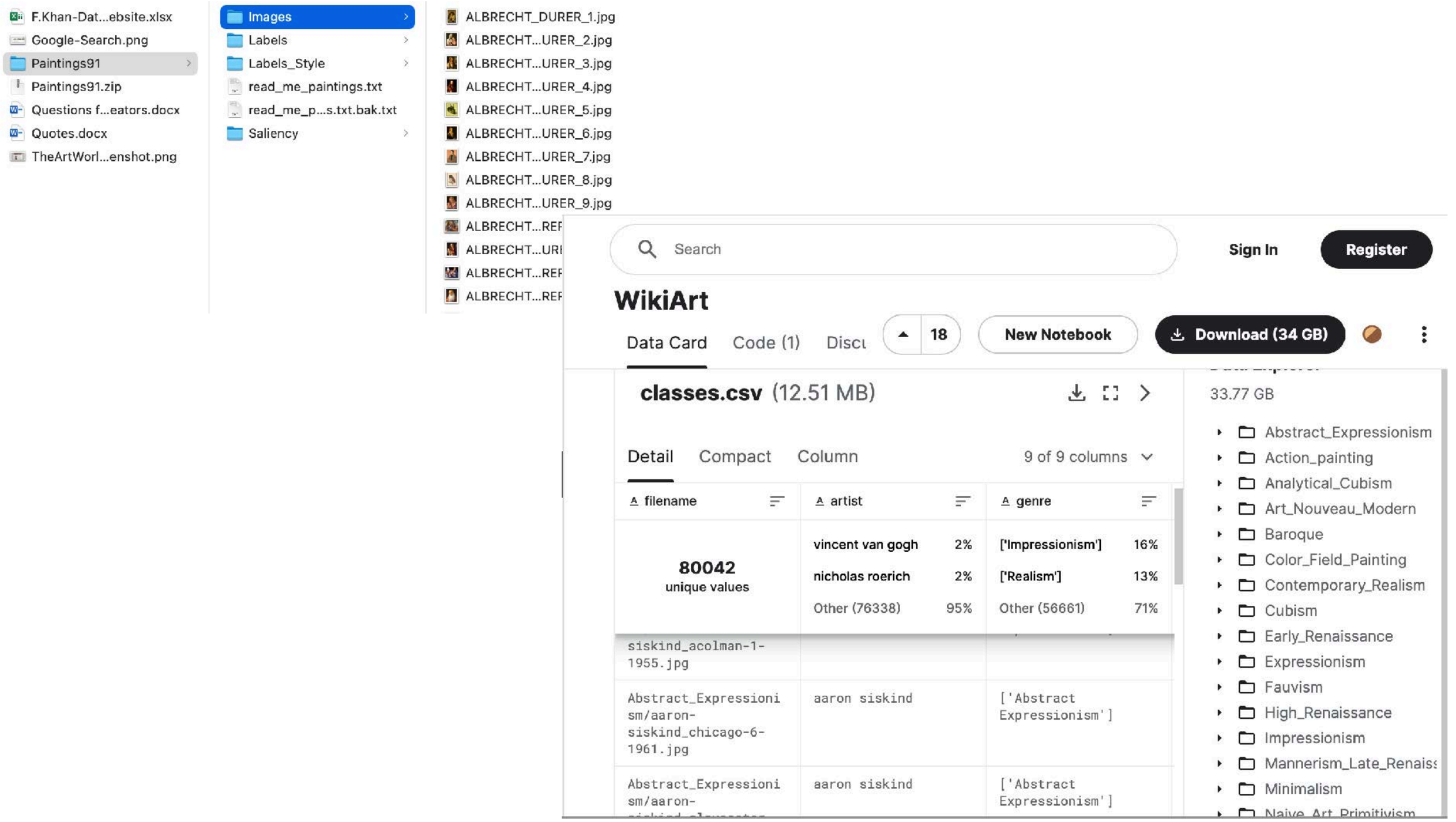
“Categories are developed in the interest of externality and objectivity, freeing the observer from any responsibility for them. These presumably objective categories of large historical classification are then (silently) **treated as aesthetic properties of each object**. Style, designated by the art historian, is treated as if it were **possessed** by each object.”

—Svetlana Alpers, 1977

What pre-existing data are these categories formed from?




Google Arts & Culture
Home
Explore
Play
Nearby
Favorites
Sign in
8 Contemporary Art Galleries to Explore From Home
By Google Arts & Culture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Saliency
ALBRECHT_DURER_1.jpg
ALBRECHT...URER_2.jpg
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ALBRECHT...URER_9.jpg
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Sign In
Register
WikiArt
Data Card
Code (1)
Disc
18
New Notebook
Download (34 GB)
classes.csv (12.51 MB)
Detail
Compact
Column
9 of 9 columns
filename
artist
genre
80042
unique values
vincent van gogh 2%
nicholas roerich 2%
Other (76338) 95%
['Impressionism'] 16%
['Realism'] 13%
Other (56661) 71%
siskind_acolman-1-1955.jpg
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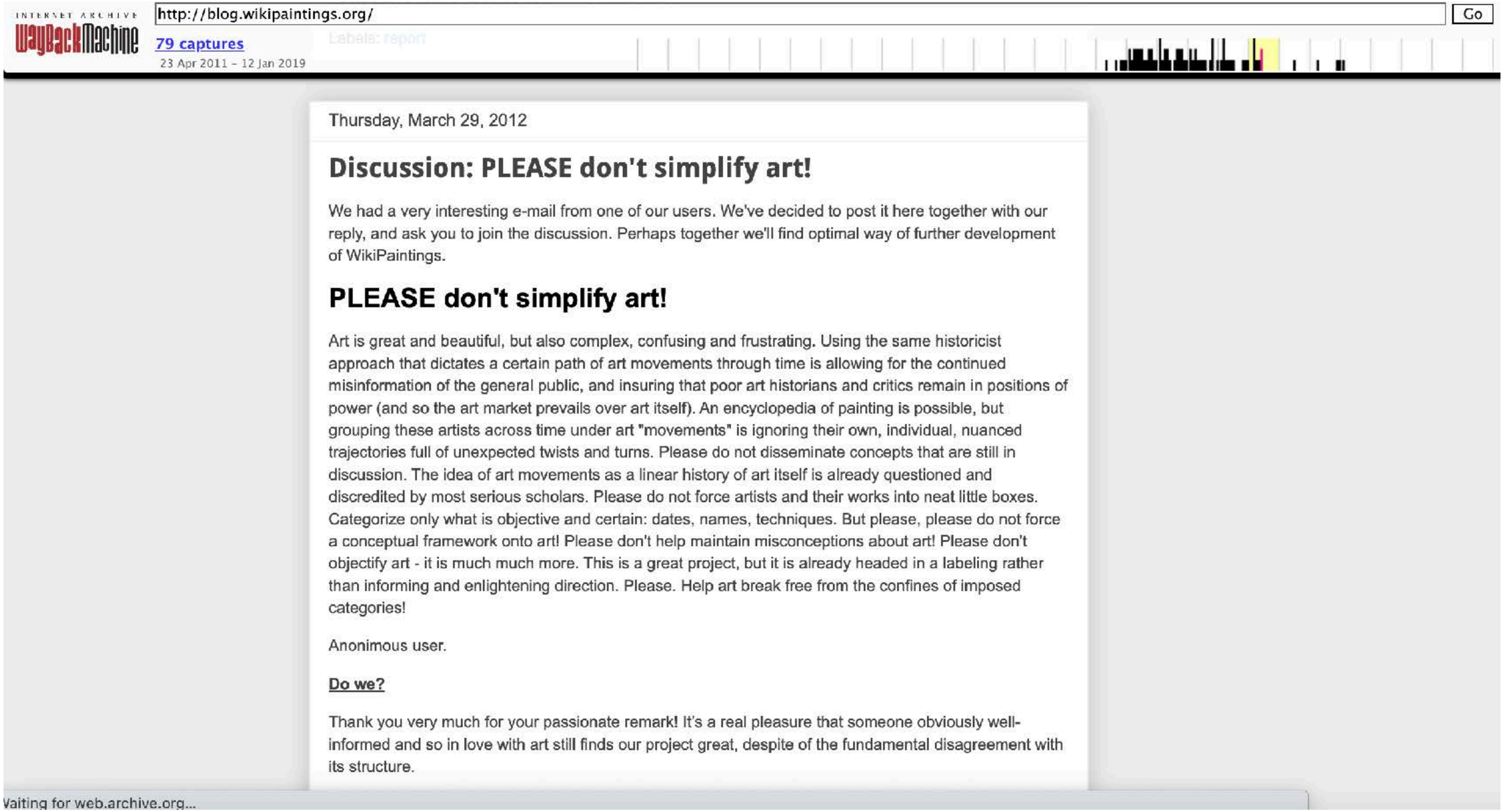
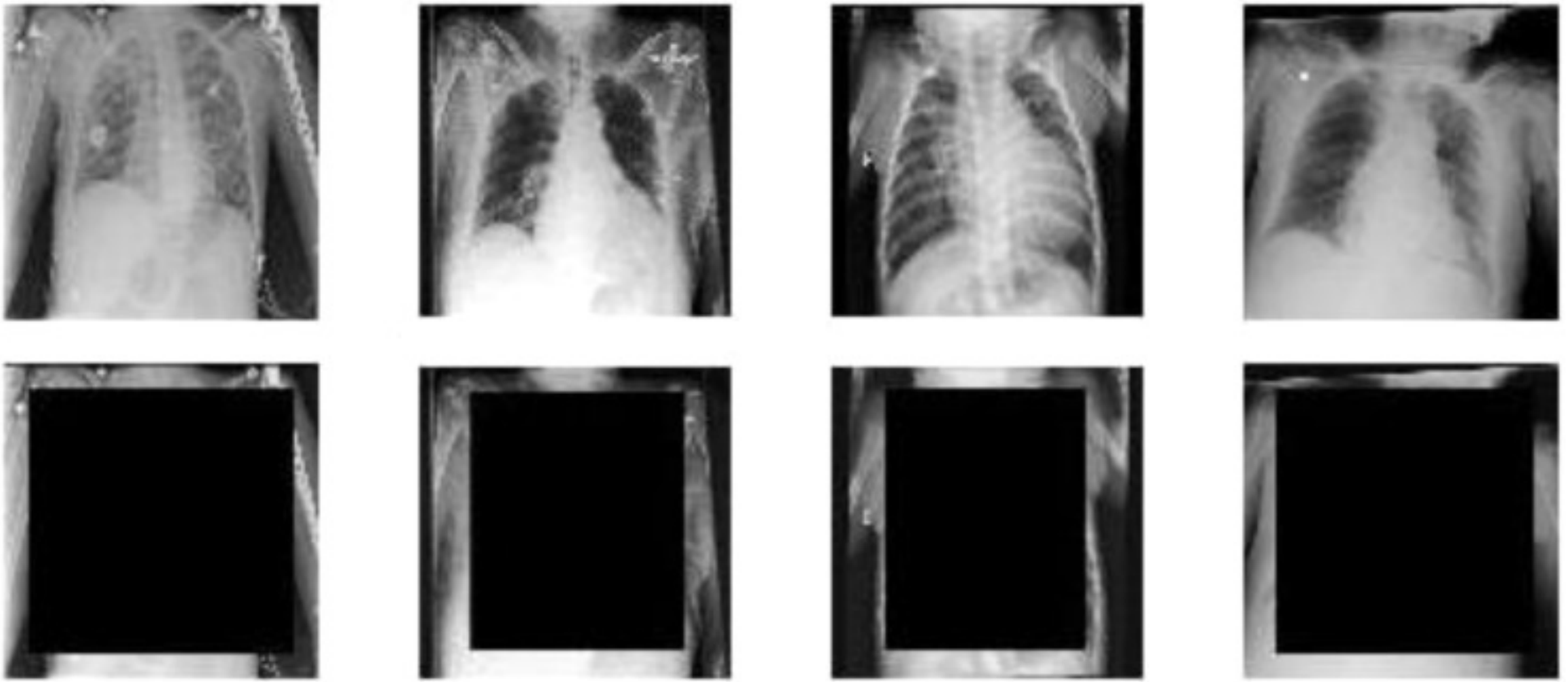
Art_Nouveau_Modern
Baroque
Color_Field_Painting
Contemporary_Realism
Cubism
Early_Renaissance
Expressionism
Fauvism
High_Renaissance
Impressionism
Mannerism_Late_Renais
Minimalism

“Please do not force art into neat little boxes.”



Tank Classifier problem

Tank Classifier problem



Maguolo, Gianluca, and Loris Nanni. “A Critic Evaluation of Methods for COVID-19 Automatic Detection from X-Ray Images.” *arXiv:2004.12823 [Cs, Eess]*, September 19, 2020. http://arxiv.org/abs/2004.12823.

Summer vision project, 1966

Goals - General

The primary goal of the project is to construct a system of programs which will divide a vidisector picture into regions such as

likely objects

likely background areas

chaos.

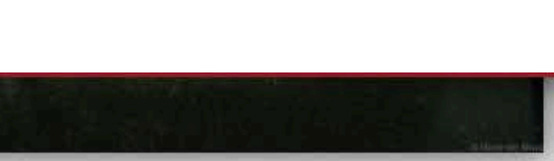
We shall call this part of its operation FIGURE-GROUND analysis.

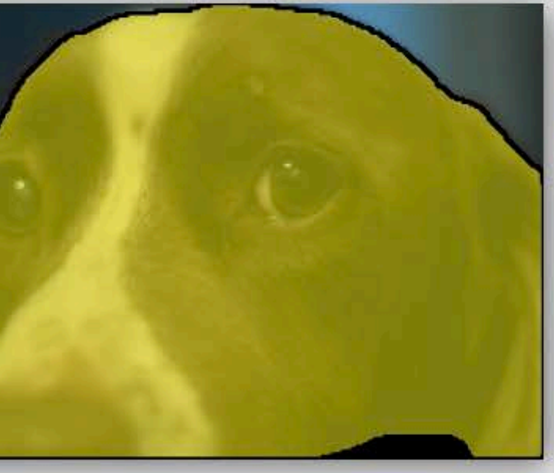
It will be impossible to do this without considerable analysis of shape and surface properties, so FIGURE-GROUND analysis is really inseparable in practice from the second goal which is REGION DESCRIPTION.

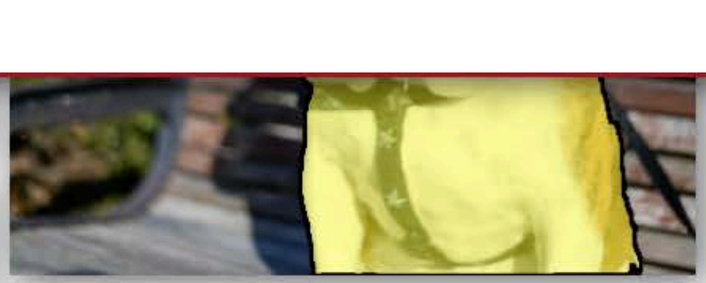
The final goal is OBJECT IDENTIFICATION which will actually name objects by matching them with a vocabulary of known objects.

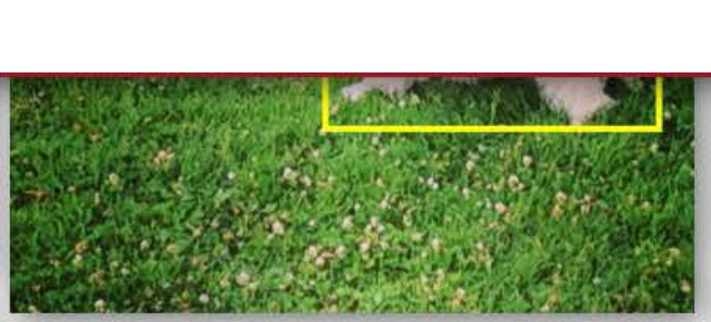
Papert, Seymour A. “The Summer Vision Project,” July 1, 1966. https://dspace.mit.edu/handle/1721.1/6125.

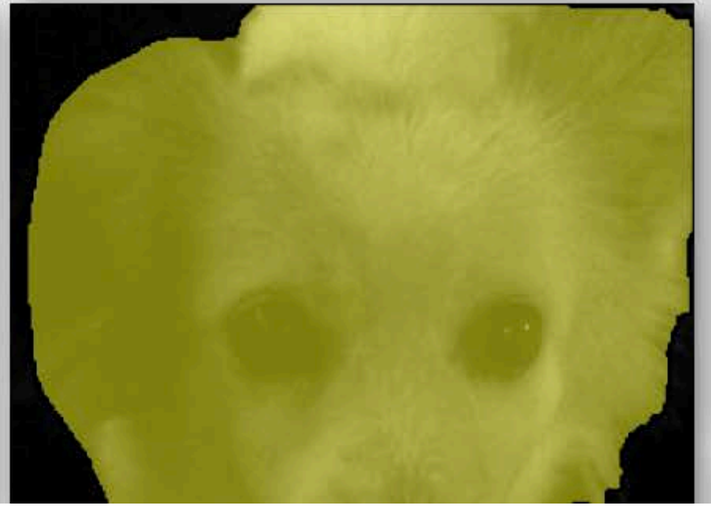
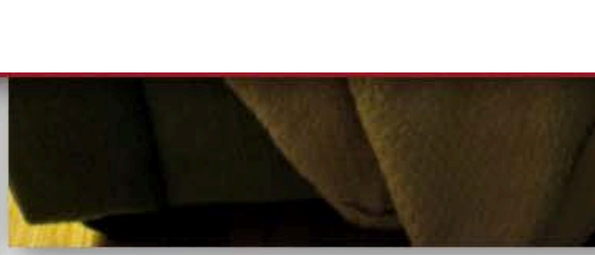
How to understand an image?







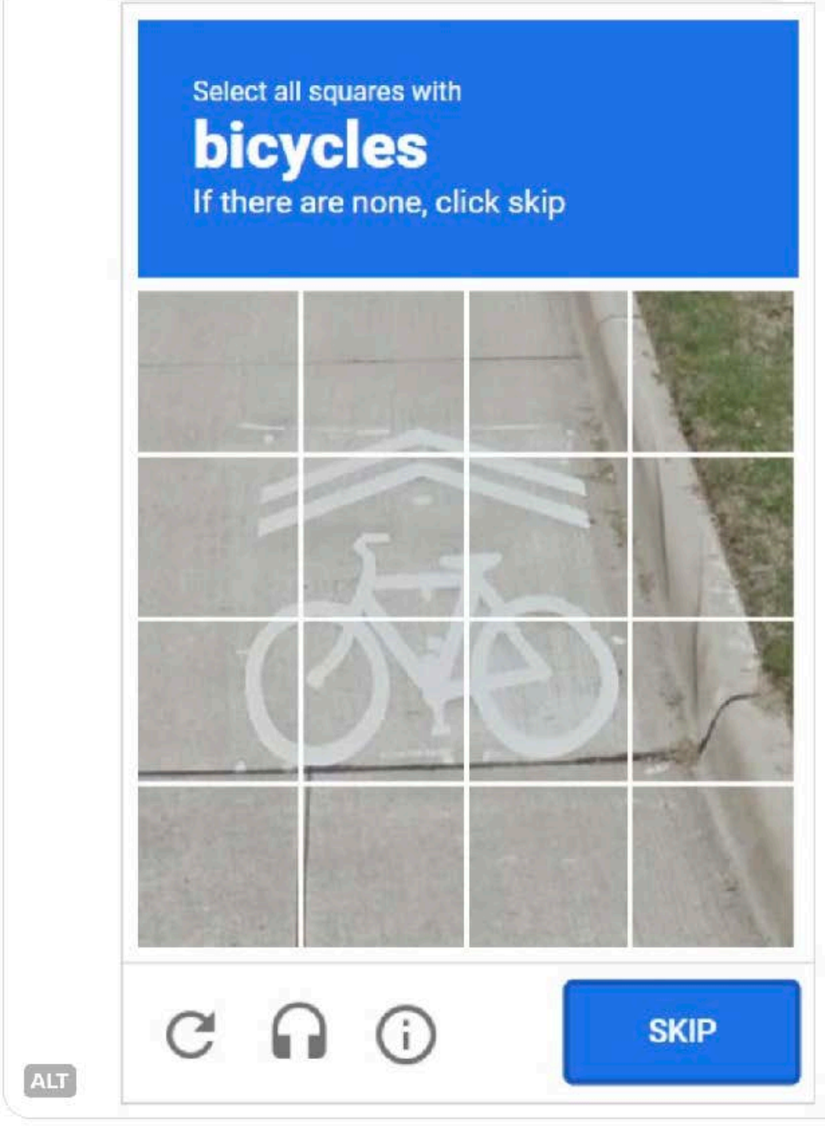


Ramona Sprenger
@ramonasprenger

Ceci n'est pas un vélo.

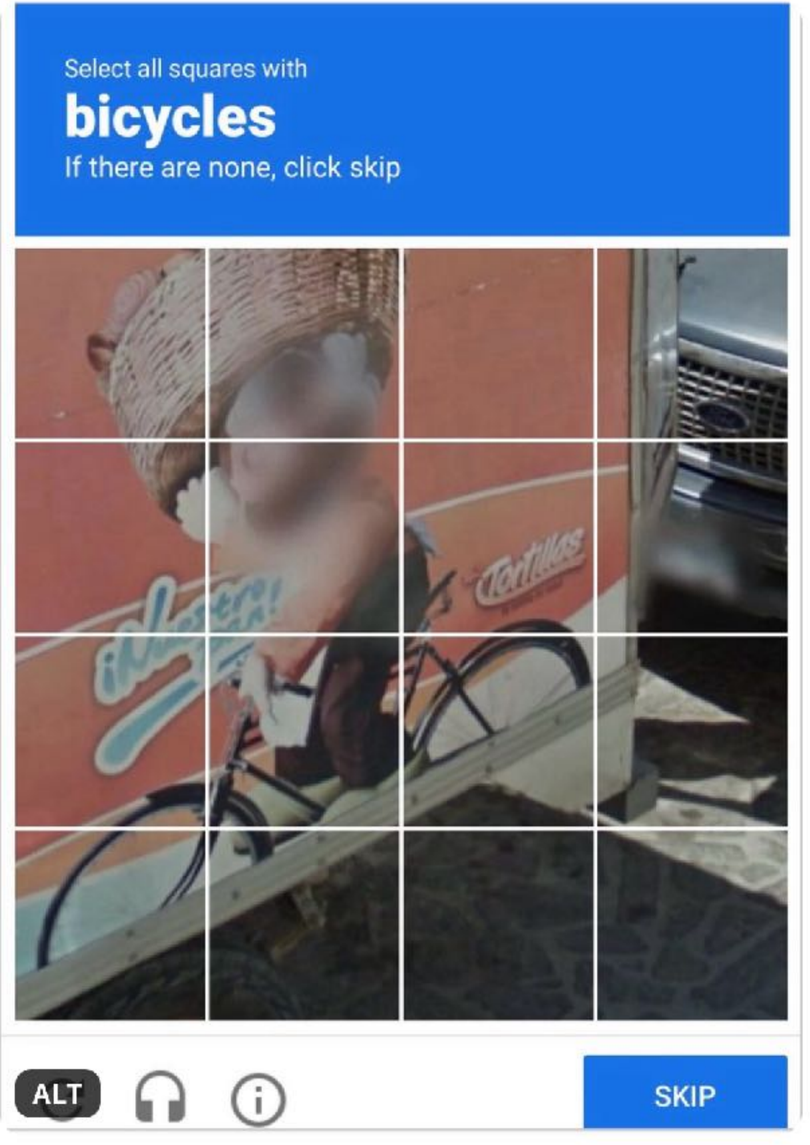
Translate post



10:20 AM · Dec 15, 2022

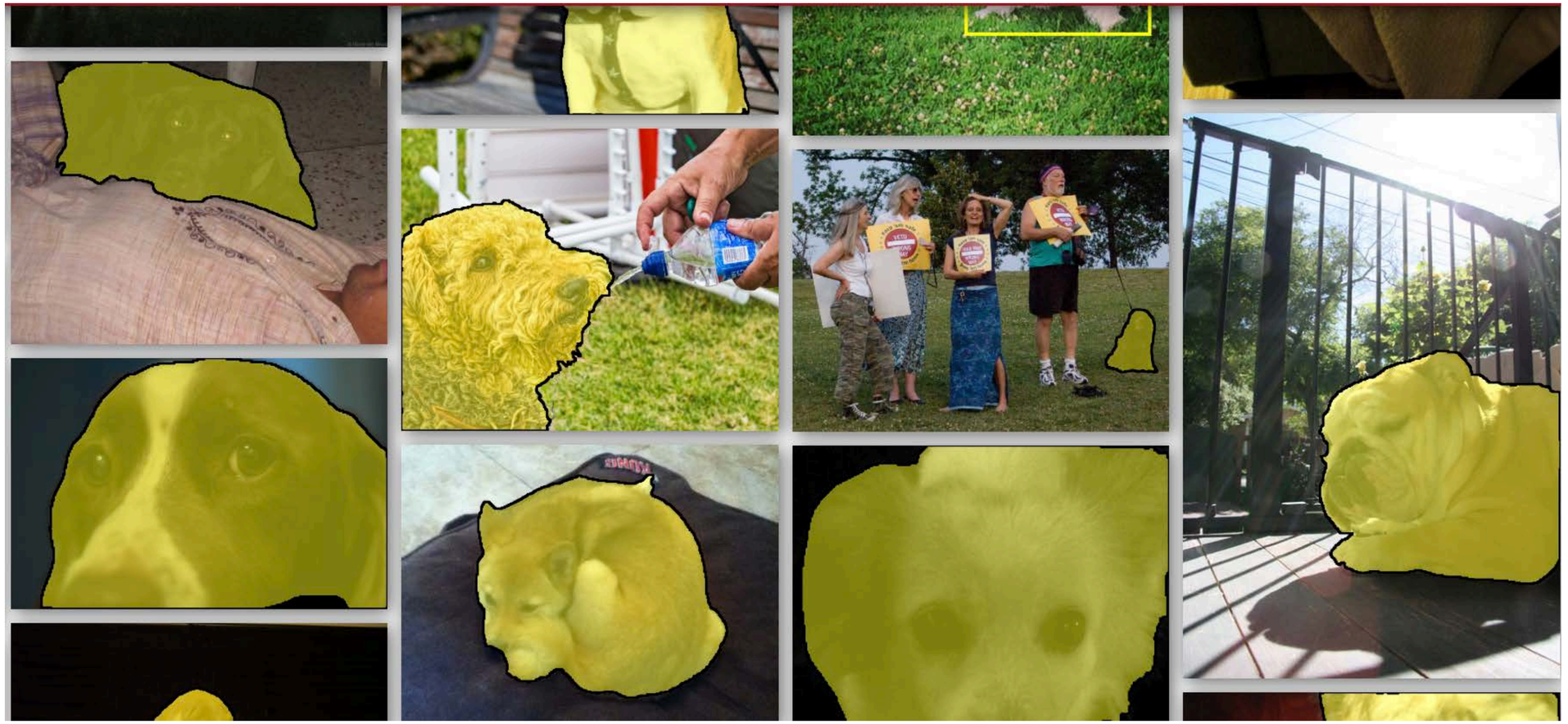
Burrito Justice @burritojustic... · 10d

ceci n'est pas un vélo

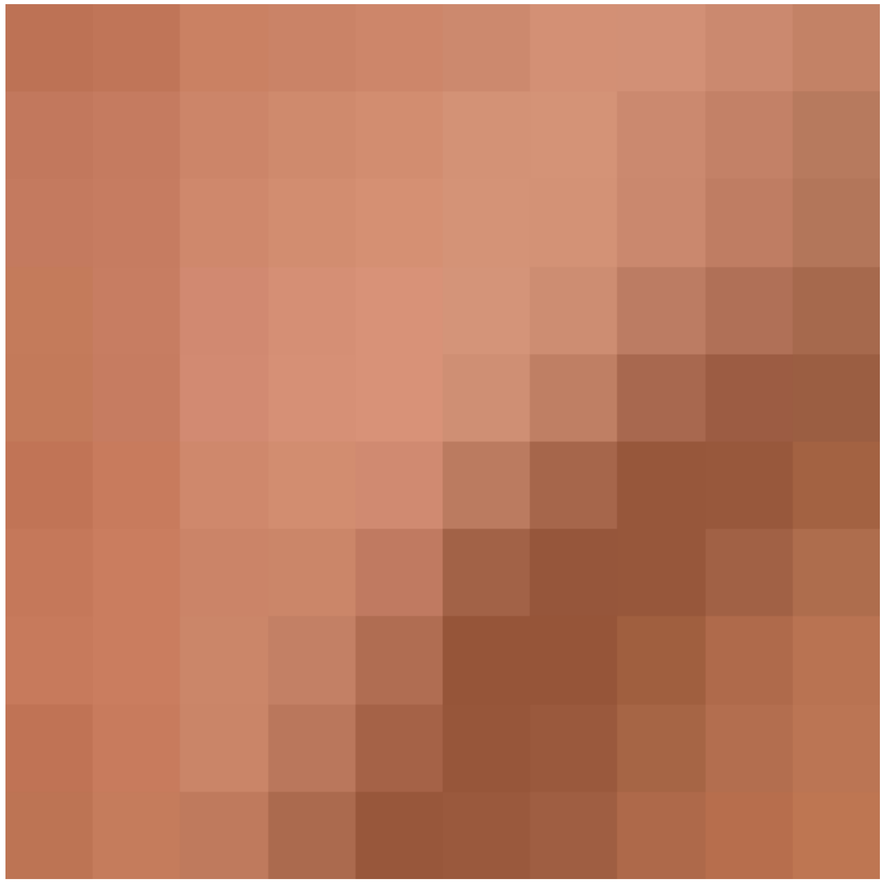


3 15 63

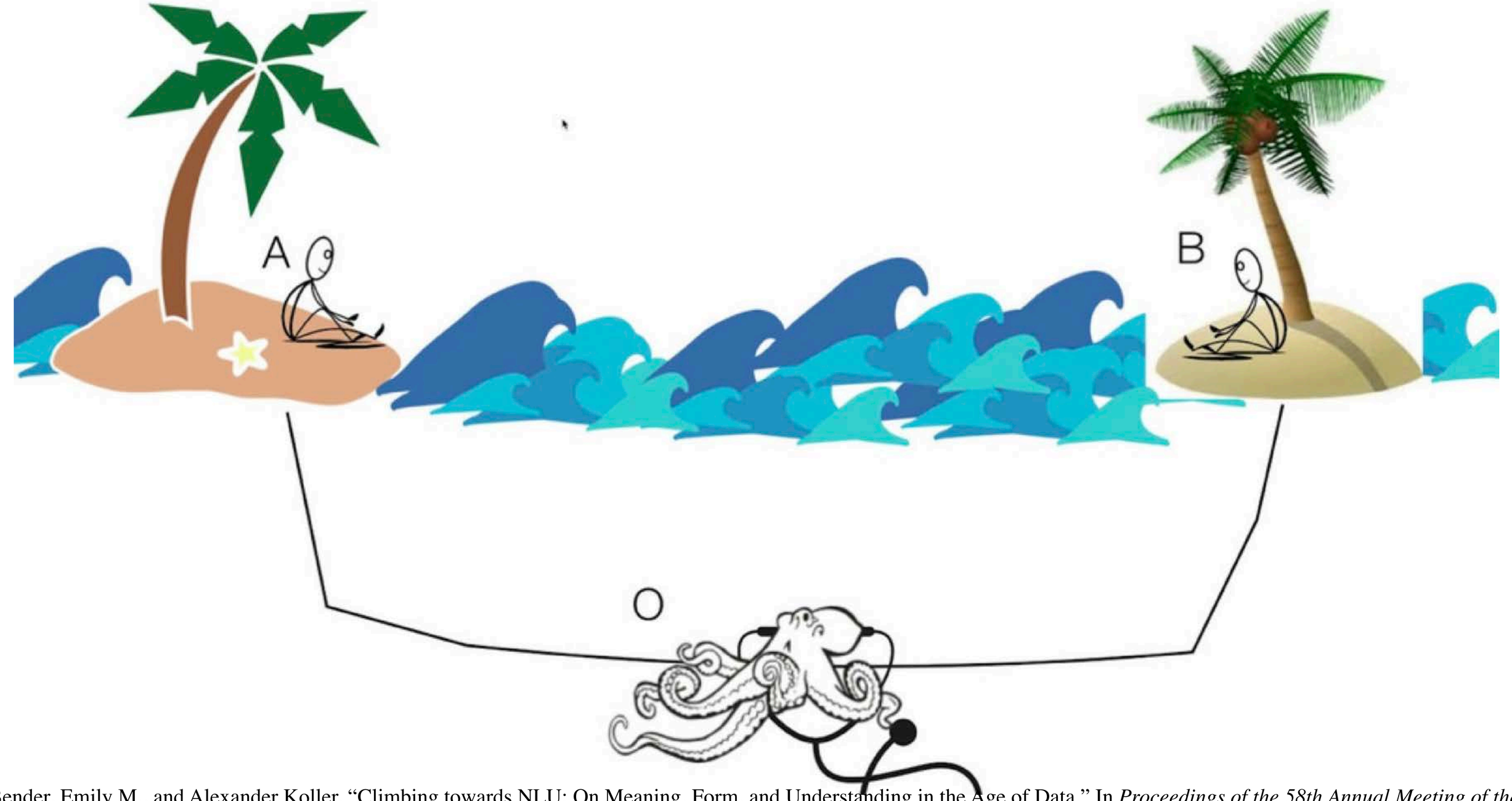
Machine vision:
democratic, flattening, highly indiscriminate



Issues of resolution – lower threshold in object recognition



What can generative AI teach us about how models ‘understand’ (or lack understanding) regarding pictures?

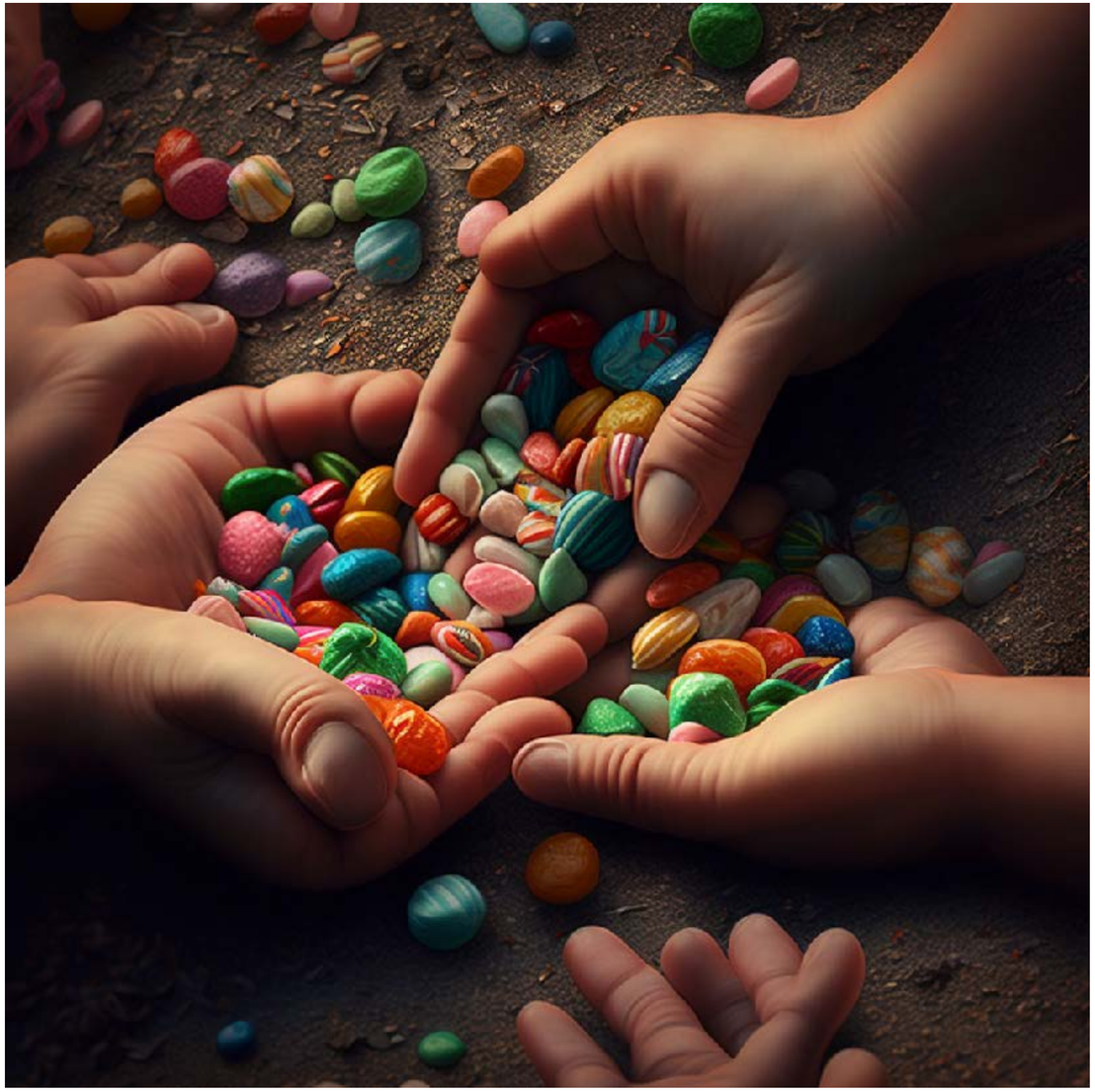


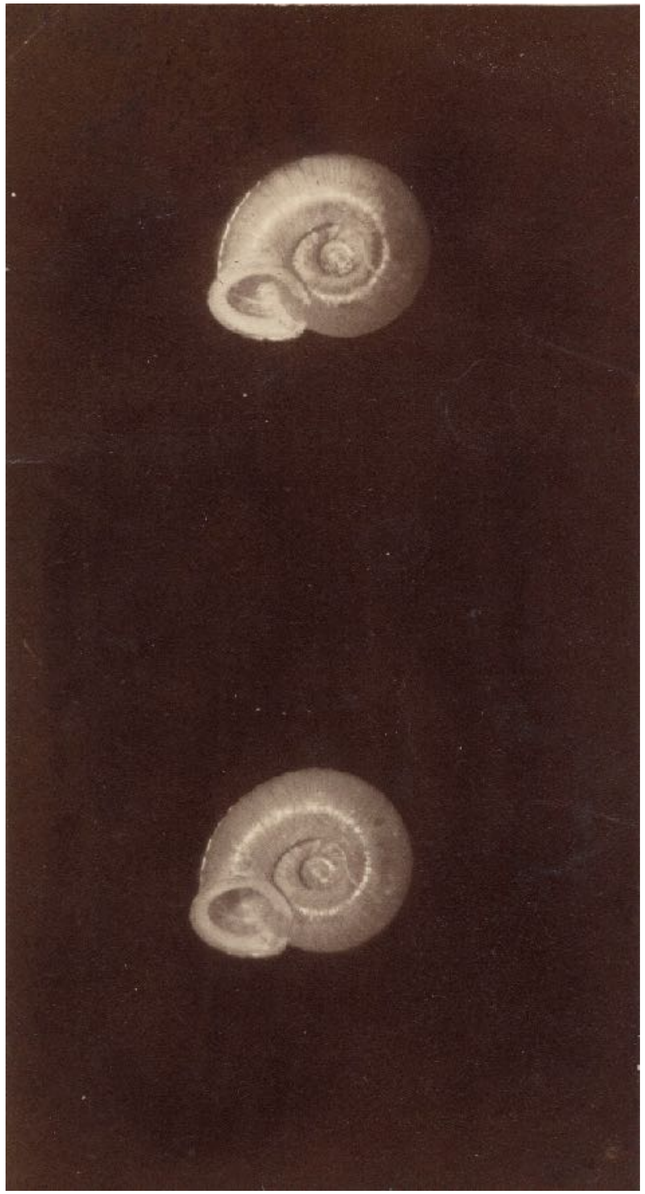
Bender, Emily M., and Alexander Koller. “Climbing towards NLU: On Meaning, Form, and Understanding in the Age of Data.” In *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, 5185–98. Online: Association for Computational Linguistics, 2020. https://doi.org/10.18653/v1/2020.acl-main.463.

The space problem

- AI image generators are trained on two dimensional images
- Lack of understanding of space — only understand representations
- Struggles with complex spatial configurations

The space problem





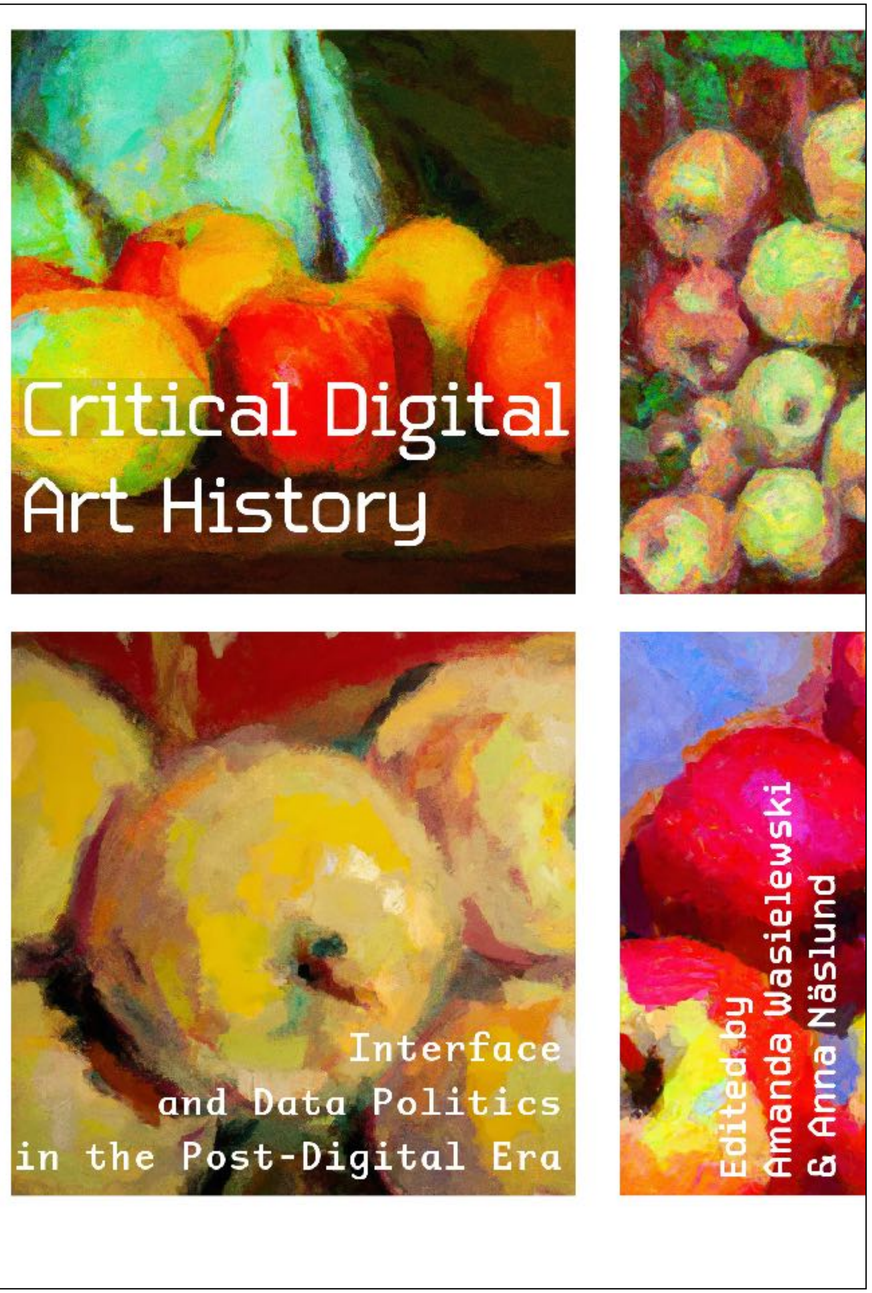
Wasielewski, Amanda. “Lurking Within Reach: Stereoscopic Photomicrography in the 1860s.” *History of Photography* 39, no. 1 (January 2, 2015): 56–70.

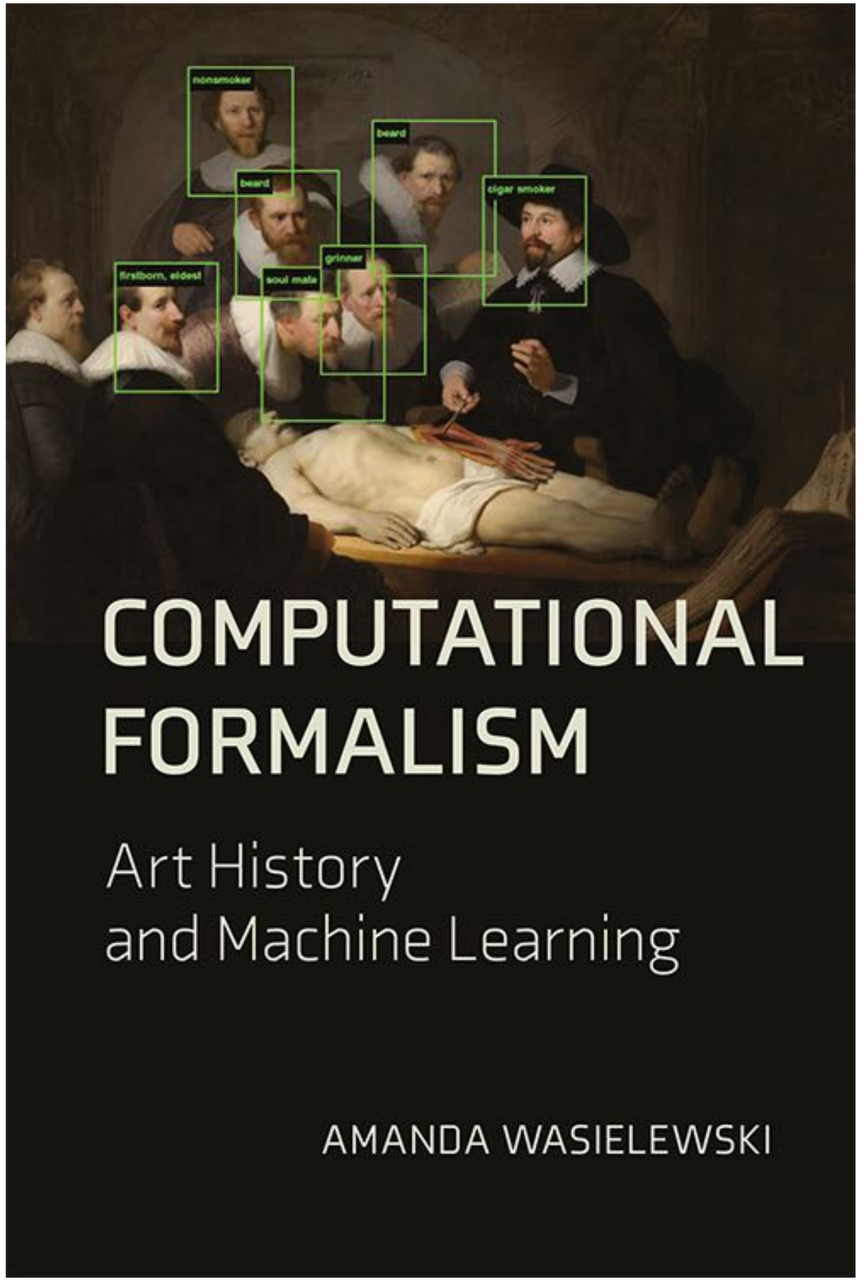
three dancers leaping in the air, acrobatics --ar 16:9 --style raw

“Midjourney can’t count”

“Midjourney can’t count”

Midjourney prompt: a building in New York with 10 stories





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