

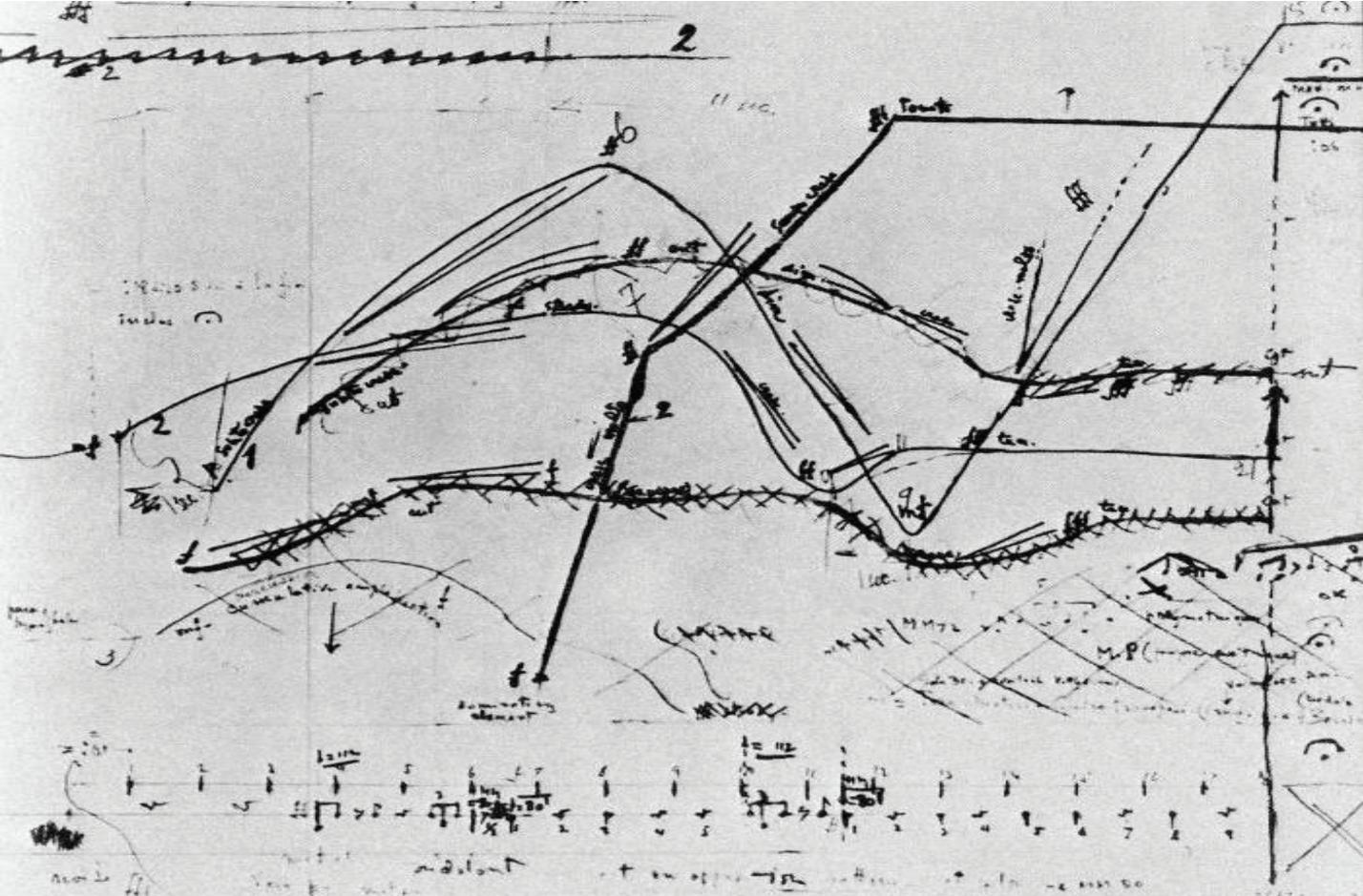
RECODING ART: VAN ABBEMUSEUM COLLECTION¹

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Experimental methodology: honouring unexpected noises

MORESCHI: My arrival for the on-site research at the Van Abbemuseum began with a coincidence that sets the tone of the methodology applied in our research. As soon as the taxi dropped me off in the Eindhoven house where I would stay for 20 days, I noticed a sign near the entrance stating that the composer Edgard Varèse had lived for nine months in that same street.

When Varèse lived in that street sixty years earlier, he was creating *Poème Electronique*, a commission from the Philips company. The eight-minutes song would become the soundtrack of the pavilion created by Le Corbusier at the 1958 Brussels World's Fair. For this composition, Varèse gathered trivial sounds from Eindhoven, noises that would only be the disposable sounds

of everyday life for many. But not the composer who, exhibiting keen attention and sensitivity, saw poetic power in these sounds and produced a striking composition.

In this research, we follow a similar path: valuing what seems insignificant for many. On the first day in Eindhoven, the Van Abbemuseum's friendly Information and Communications Technology coordinator Peter Classen handed Moreschi a pen drive with 654 images from the works of the museum's collection that are now exhibited (*The Making Of Modern Art* and *The Way Beyond Art*). Via internet, the images were sent to Pereira, who already knew exactly what to do as soon as he received them.

PEREIRA: On 23 October 2017, I sent an email to Moreschi. It included two images: a pain-

Fig. 1: Diagram of work for *Poème électronique*, 1957-1958, by Edgard Varèse.



T07573_10.jpg

Plumbing Fixture	79%
Product Design	72%
Product	68%
Sink	67%
Ceramic	66%
Hardware	66%
Urinal	63%
Bathroom Sink	62%
Toilet Seat	61%

Fig. 2: Print from the e-mail that Moreschi received from Pereira, with the re-reading of Duchamp's Fountain by the AI Google Cloud Vision. None of the results considered the image a photograph of an artwork.

ting of Christ and Duchamp's Fountain. The email went on with a series of graphics, percentages, and keywords that all analysed these two images that were at no point interpreted as art. Duchamp's Fountain was described as a plumbing fixture, product design and as... a urinal. Google's state-of-the-art AI, Google Cloud Vision, was behind this reading. As someone who was not yet specialized in Artificial Intelligence, Moreschi was fascinated by these results.

That email was just the beginning of what would later become this research. To create a new way of interpreting this set of images, Pereira created a script to send the images of the artworks to six of the most commonly used commercial AI services: Google, Microsoft, Amazon, IBM, Facebook, and the widely used YOLO library. The results obtained for each artwork are shown through a custom web interface, which is accessible and open-source (enabling other readings and analyses by other people) via this link¹ (the page may take some time to load). As soon as we had inserted the photographs from the museum collection, we named this open-source website *Recoding Art*.

¹ <https://testingdataviz.github.io/VAD0.4/>

According to a logic of physical detachment that often characterizes the digital and although Moreschi sojourned a couple of blocks away from the museum and its collection, the first two weeks of his stay in Eindhoven did not focus on the museum itself (and its physical works). Instead, he dedicated all his time analysing the approximately 55,000 results obtained from the analyses of the 654 works (available in the interface *Recoding Art*) while building a method capable of organizing these results through identifying patterns.

To understand the development of this methodology, we can turn to the soundtrack used by Moreschi in this results-screening process – as sung by Bjork, “My headphones / They saved my life.” Much of the results’ analysis materialised as he listened to Brian Eno and Peter Schmidt. Following the Varèse logic of appreciating what is generally overlooked, in 1975, long-time friends Peter Schmidt and Brian Eno created a set of cards called *Oblique Strategies* designed to aid the artistic process². One of the cards epi-

² The entire project, including the contents of the cards, is documented on a website <<http://www.rtqe.net/ObliqueStrategies/>> created by musician and educator Gregory Alan

#1 LEHRENDER CHRIST 1931 Ernst Barlach #1 .jpg a statue of a person 80%



Google Cloud Vision Microsoft Azure Amazon Rekognition IBM Watson Facebook Detectron
 Darknet YOLO Amazon Mechanical Turk

Label Annotations: sculpture 96% classical sculpture 88% statue 87% metal 80% bronze sculpture 80%
 ancient history 76% bronze 74% gautama buddha 70% temple 69% carving 64%

Safe Search Annotations: Adult: VERY_UNLIKELY Medical: VERY_UNLIKELY Racy: UNLIKELY
 Spoof: VERY_UNLIKELY Violence: UNLIKELY

Best Guess: classical sculpture

Visually Similar: 

Associated Web Entities: Bronze 0.9 Statue 0.8 Bronze sculpture 0.7 Classical sculpture 0.7
 Sculpture 0.6 Carving 0.6 Ancient history 0.5 History 0.4 Classicism 0.4 Gautama Buddha 0.0

#2 WINTERBILD 1930 Max Beckmann #2 .jpg a painting sitting in front of a window 56%



Google Cloud Vision Microsoft Azure Amazon Rekognition IBM Watson Facebook Detectron

tomizes our methodological approach. It states: “Honour thy error as a hidden intention.” The advice proved valuable in a selection process involving interpretations that initially seemed like blatant misunderstandings by dumb machines. We decided to steer away from a feeling of superiority related to the technological systems we were using. The cards in the deck and Varèse’s strategy of composing music using sounds that usually go unnoticed were fundamental to a type of methodology that would make Moreschi look carefully at the interpretations by the AIs, minimizing a search for results that were “true” or “correct.” On the contrary: we decided to value the unexpected outcomes.

This stance differs from some studies of AI systems that focus on the mistakes and biases

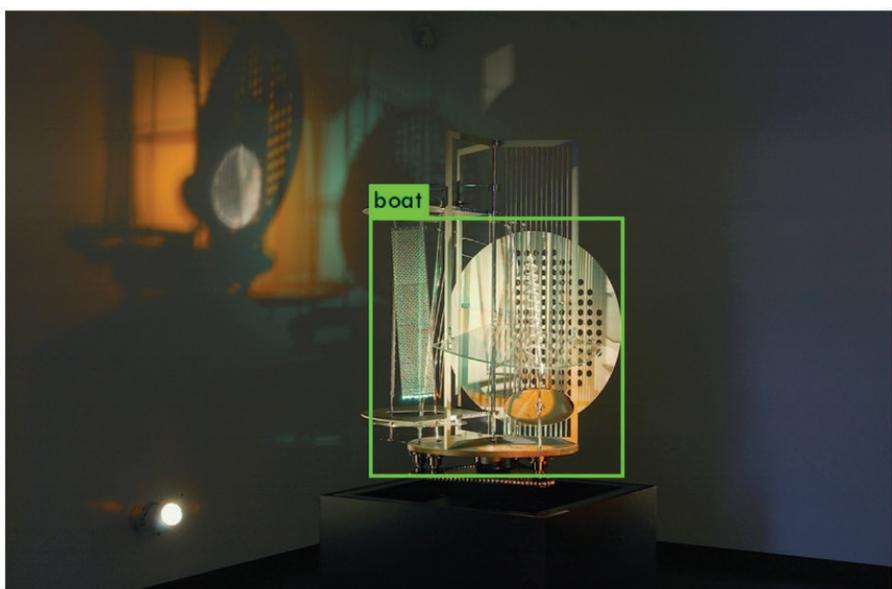
Taylor with the permission of Brian Eno.

of AI (and how to avoid and fix them).³ Indeed, this quest for algorithmic accountability and ethics is important, given the amount of problems AI already causes and the way in which these errors affect people (especially underserved minorities and marginalized communities). However, focusing on “solving bias” may serve as a diversion from critically interrogating these systems and understanding them in their complexity (Powles and Nissenbaum, 2018). In this work, we turn to the glitches of commercial Computer Vision not as something that needs to be improved for increasing the system’s overall efficacy (i.e. fixing the algorithm),⁴ but as a way

³ For works related to this, see for example O’Neil (2016) and Eubanks (2018).

⁴ Of course, the subject matter of this research (artworks from a collection) is also particularly suitable for this approach, since, unlike predictive policing and other egregious al-

Fig. 3: Recoding Art, an open-source website with the Van Abbemuseum artworks’ reading by AIs.



#23 LICHT-RAUM MODULATOR (1922-1930) replica 1970 László Moholy-Nagy #23 .jpg a lamp that is lit up at night 49%

Google Cloud Vision Microsoft Azure Amazon Rekognition IBM Watson Facebook Detron Darknet YOLO Amazon Mechanical Turk

Label Annotations: lighting 77% light fixture 76% lamp 66% still life photography 53% lighting accessory 51%

Safe Search Annotations: Adult: VERY_UNLIKELY Medical: VERY_UNLIKELY Racy: VERY_UNLIKELY Spoof: VERY_UNLIKELY

Violence: VERY_UNLIKELY

Best Guess: laszlo moholy nagy light space modulator

Visually Similar: 

Associated Web Entities: Light-Space Modulator 1.0 Light 0.9 Bauhaus 0.6 Art 0.5 Modulation 0.5 Photonics 0.5 Light art 0.5

Artist 0.4 Constructivism 0.4 Design 0.4

Fig. 4: Licht-raum Modulator (1922-1930, replica 1970), by László Moholy-Nagy, described by Microsoft's AI as "a lamp that is lit up at night," a similar result to Google's AI ("lighting," "lamp," "light fixtures"). Darknet YOLO (open-source AI) goes further and sees the work as a possible "boat," which helps us to construct an interesting hypothesis: that, from the interpretive logic of AIs, the circular reflection on the wall can be a full moon in the high sea.

of speculating on the machinations of systems, both the AI systems analysed and the art system as a whole. It is about showing that these systems are neither a "given," nor "certain" – thus contributing not to a simplistic and capitalist idea of "algorithm effectiveness", but to the goal of understanding AI's operating structures. This movement may point to speculative changes and corrections to these systems, but at the same time embraces some of these unexpected results as enabling a more poetic and experimental understanding of reality.

Institutional Critique 2.0

MORESCHI: In the 14 days I spent analysing the Van Abbemuseum collection as shown through our Recoding Art interface, I tried to

algorithmic systems, these errors do not directly harm others.

cast aside the rationality stemming from at least a decade of working as an artist. Many of those results had a freshness that I had not felt in a long time. It was two weeks of an intense and fascinating process of denaturalization: it felt as if I was coming into contact with contemporary art for the first time in my life.

As the following examples confirm, our experience in using AIs to interpret images of artworks can be seen as a new mode of Institutional Critique.⁵ Widespread since the 1970s, the

⁵ The use of AIs to reveal processes of the art system also connects to Conceptual Art practices, especially in the premises written by artist Sol Lewitt (Paragraphs on Conceptual Art 1967) that defends non-logical and non-specialized artistic understandings. Some of his sentences include: "Irrational judgements lead to new experience"; "The artist may not necessarily understand his [sic] own art. His perception is neither better nor worse than that of others"



a close up of an old computer 39%

ejection
seat

(/support/seat/ejection seat)

50%

term refers to a series of procedures seeking to reveal the structures that make the art system function. As American artist Andrea Fraser points out in *What is Institutional Criticism?*, this mode of analytical approximation of art and its elements follows some propositions, the first of which consists in always considering social context to understand what is seen as art. This practice takes care of sites above all as *social sites*, structured sets of relationships that are fundamentally social relations. To say that they are social relations does not mean to oppose them to intersubjective or even intra-subjective relations, but to say that a *site* is a social field of these relations. (Fraser 2005)

According to Fraser, art is never the object of art, but rather, it is a network interconnected with this object of socially-constructed elements. Our AI experiments were successful in revealing this construction and more. Using Re-coding Art, we were able to broaden the range of

and "There are many elements involved in a work of art. The most important are the most obvious."

social relationships evidenced by Fraser, now in a digital layer. Our institutional critique 2.0 proposed here and put into practice permeates the exchange of social relations in the museum's physical space and considers the exchanges that also took place in digital layers in an increasingly organized world according to the criterias and categories of commercial AI systems. As Fraser and other practitioners of institutional criticism discuss, art is not isolated from the social transformations of its context, so it is very pertinent to pursue an updated institutional critique now, by adding the layers of digital infrastructures of the museum and its collection – understanding it as part of such a contemporary social context of works of art. In other words, our defense here is for institutional critique to be updated to include social exchanges (including new processes of artistic legitimation) now resulting from AIs. Processes such as computer vision are causing significant changes in society, and this is also directly reflected in the understanding of works of art and museums. Since institutional criticism is a direct consequence of the context

Fig 5: Corneille's *Aux Abords De La Grande Cité* (1960) read as "ejection seat" and "a close-up of an old computer." Many works analysed by Microsoft Azure's AI are understood as close-ups of something. Since the gaze of AI does not function from the human logic of physical distance between the observer and the observed, the concepts of closeness and depth radically change here – anything that is not recognizable at first may indeed be the detail of an everyday object.



Google Cloud Vision Microsoft Azure Amazon Rekognition IBM Watson Facebook Detectron Darknet YOLO Amazon Mechanical Turk

Label Annotations: red 96% art 96% orange 92% painting 86% acrylic paint 78% modern art 77% visual arts 75% illustration 75%
 paint 71% artwork 62%

Safe Search Annotations: Adult: VERY_UNLIKELY Medical: LIKELY Racy: VERY_UNLIKELY Spoof: VERY_UNLIKELY Violence: UNLIKELY

Best Guess: max ernst what kind of bird are you

Visually Similar: 

Associated Web Entities: Painting 1.2 Interrogation (what kind of bird are you?) 1.0 Art 0.7 Artist 0.6 Visual arts 0.5 Painter 0.5
 Sculptor 0.5 Modern art 0.5 Drawing 0.5 Image 0.5

jack-o'-
lantern
(halloween)

(/lamp/jack-o'-
lantern
(halloween))

50%

Safe Search Annotations: Adult: VERY_UNLIKELY Medical: LIKELY Racy: VERY_UNLIKELY Spoof: VERY_UNLIKELY Violence: UNLIKELY

Fig. 6: Interrogation (What Kind of Bird Are You?) (1956-1958), by Max Ernst, read by IBM's AI as a "jack-o'-lantern," the pumpkin traditionally carved on Halloween in the United States – an example that shows how AI interpretations are fashioned from an American ethnocentric logic. This example also demonstrates that the fact that works by well-known artists in the collection being read as art does not prevent them from also being interpreted as things unrelated to the artistic context. It is interesting to see the multifaceted ability of AIs to offer, within the same set of results, both the legitimated layer of the image as well as its pre-art state.

of art, these transformations in the field must now also be considered by those who are currently interested in conducting studies of institutional criticism.

An anecdote by British writer Rudyard Kipling illustrates this detached stance, which is common to both Institutional Critique and to the process of reading images by AIs. Kipling (2013), says that Adam, the first man in the world, sat next to a tree and scratched something in the clay with a small twig. It was "the first rough drawing the world has ever seen" and "a jubilation for the vigorous heart of this man." That's until the Devil appears, walks up and whispers behind the foliage: "It's beautiful, Adam, but ... is this Art?" Because they are not trained to read images of contemporary art, AIs used as practices of Institutional Critique do as the Devil did with Adam. Thinking about their results without prejudice and with an open mind is a possible way to distance ourselves from the specialized codes of art and create relevant materials for the critical study

of art and its system. Additionally, many of these results can help mediate these works to non-specialized audiences, initiating a more accessible relationship with these objects. Among the results are:

1. Art as everyday objects:

Interpretations such as these show that, beyond their discourse, artworks consist of materials that can also be found outside of the museum context, i.e., in everyday life. This is the case when Duchamp's *Fountain*, which bears the signature of the artist, is interpreted as an actual urinal. Such readings invite us to see artworks in a way that is disconnected from the idea of authorship. Analysing these results is tantamount to thinking about the process of symbolic transformation of artworks, one of the processes underpinning contemporary art. These results – much like the results in the following pages – help removing any so-called aura from the art

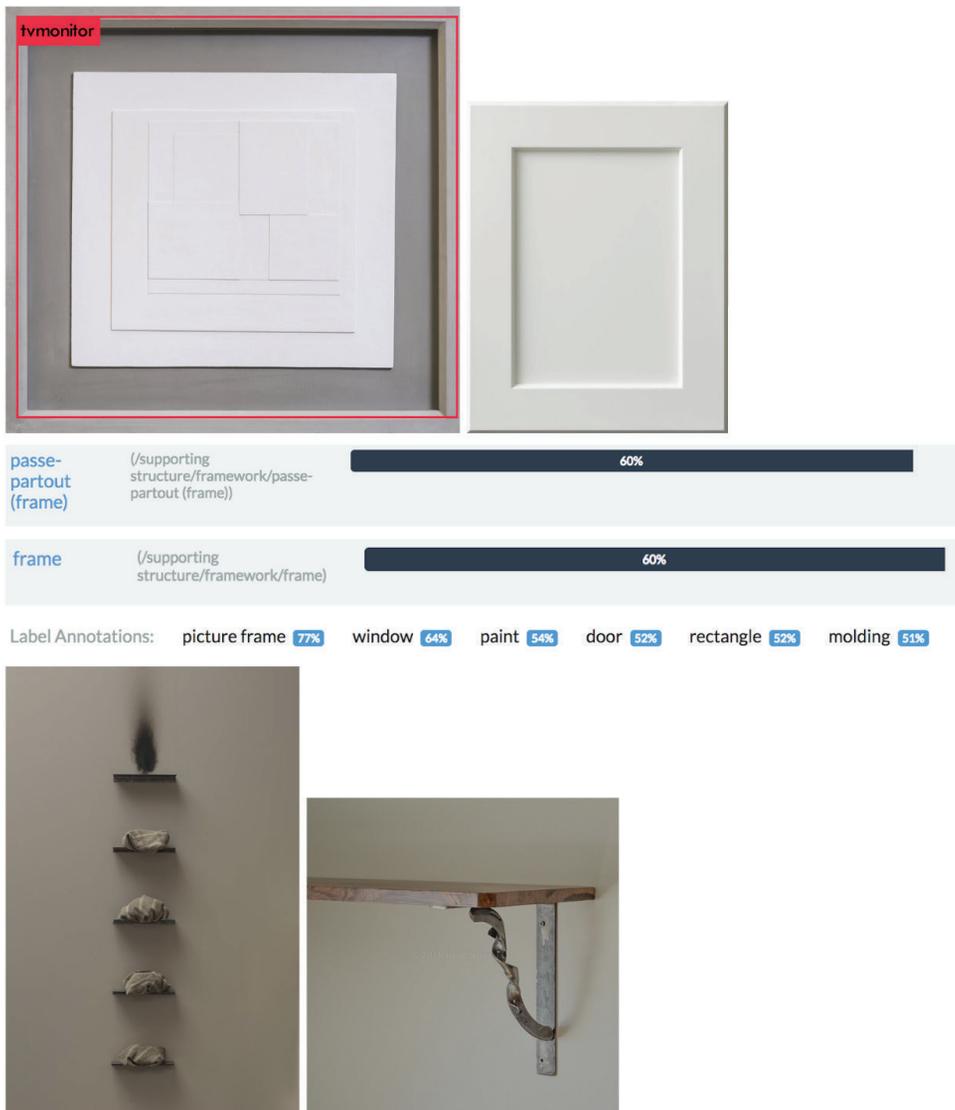


Fig. 7: Some images received interpretations prioritizing the physical structures protecting or supporting the works (“picture frame,” “framework,” “supporting structure”) rather than their legitimized artistic content. This happened with Ben Nicholson’s *White Relief* (1936), often understood by AIs as a frame, and Jannis Kounellis’ *Untitled* (1980) which, for Google, relates to the image of a shelf, which in fact is something necessary for exhibiting the work. Such results de-structure the hierarchy between layers of the art object that are considered to be artistic and non-artistic, inviting us to envision envelopes and bases as part of the artistic structure often indispensable in the legitimation of what art is. Framed works are also often read as television monitors, which leads us to the second group of results.

object, transforming a very important art collection into an assortment of easily-recognizable objects.

2. IKEA shopping cart:

In at least one of their results, the vast majority of the works (almost 80%) were read as consumer products easily found in department stores. Such results are valu-

able in critical art studies for underlining the fact that artworks are essentially commodities – even if much more expensive than curtains –, especially in a capitalist consumer society.⁶

⁶ AI software is also an outcome of capitalism and consumerism, and its logic reinforces the reading of artworks in this way. Rather than untangling these two systems, we are interested in how one exposes the other.

Fig. 8: Femme en vert (1909), by Pablo Picasso, as a “gargoyle,” “ornament” and “phone.” And Concetto Spaziale: Attese (1960), by Lucio Fontana, as a “refrigerator,” “stove” and “kitchen.”



Gargoyle 60% Ornament 60%

Tags (from caption): building statue sitting cat bird old table graffiti street covered man standing phone perched

#13 CONCETTO SPAZIALE: ATTESE 1960 Lucio Fontana #13.jpg

Google Cloud Vision Microsoft Azure Amazon Rekognition IBM Watson Facebook Detectron Darknet YOLO Amazon Mechanical Turk

Is Adult Content? false 2%

Is Racy Content? false 4%

Is Black and White? true

Dominant Colors: White

Accent Color: [redacted]

Categories: abstract, 0% abstract_shape, 10% others, 11% outdoor, 0%

Tags (from caption): indoor white refrigerator sitting kitchen photo black door man table standing cat side counter room wearing young water woman stove

Tags (with confidence): wall 67% white 87%

3. Self-promotion:

In figurative paintings, AI tends to read people as posing for the camera, which poetically shows how art is a space for human exhibitionism – including selfies and people practicing sports. These results invite us to think of art as an essentially social and egoic practice by human beings, a process of constant self-affirmation.

4. New titles:

Microsoft Azure Computer Vision is an AI service that describes images in short sentences. During our experiment at the Van Abbemuseum, we carried-out a detachment exercise linked to the artists and their intentions: we started using these descriptions as

new titles for works in the collection. These types of procedures help demystifying the authorship and origin of art objects, creating less fetishized paths of comprehension. Because they are almost always amusing, phrases such as these can be valuable material for art classes for non-specialists and young students. Moreover, concerning textual results: Google’s AI sometimes identifies texts where there actually are none, thus creating curious descriptions.

5. Passages: windows, doors and (why not?) some tables:

Poetically, this shows that the area contained within the frame of an artwork creates a space that follows different rules than the space outside of it, and that goes on beyond the wall where



Labels: Alphabet 90% Text 90% Logo 53% Trademark 53% Emblem 52% Accessories 51% Art 51% Modern Art 51%

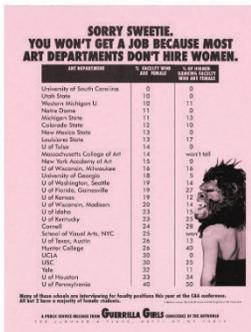
tetraskelion 0

66%



Label Annotations: font 60% product design 60% brand 60%
 Safe Search Annotations: Adult: VERY_UNLIKELY Medical: VERY_UNLIKELY Racy: UNLIKELY Spoof: VERY_UNLIKELY
 Violence: VERY_UNLIKELY
 Best Guess: Studio South
 Visually Similar:
 Associated Web Entities: Brand 63 Apartment 63 Studio South 64 monk mackenzie 65 Corporate identity 65
 Studio apartment 63 Graphic design 63 Business 64 Printing 64
 Text: LAT.31°25'N.LONG.8°41'E

Labels: Business Card 68% Paper 68% Text 68% Logo 66% Trademark 66% Word 59%



License 54% advertising 68% joint 64%

Fig. 9: Cubist works and pieces with textual content tend to be related not only to marketable objects (“product design,” “bottle”), but also to specific companies or universal ideas of the business world. This is the case with Fernand Léger’s L’accordéon (1926), which is connected to the Tetraskelion Software, a company in Jaipur (IN) offering technological solutions for travel agencies. The same is true for LAT. 31°25’N, LONG. 8°41’E (1965), by On Kawara, (“brand,” “business,” “corporate identity”) and the poster Sorry, Sweetie, Way To Go, Dude! (1994), by Guerrilla Girls, (“license,” “advertising,” “joint”). This demonstrates that the AI readings’ capitalist logic is broader than just interpreting images as products – it also includes notions and practices not necessarily related to a consumer society.

Fig. 10: Gleichzeitigkeitsstück (Nr. 23, 1. Werksatz) (1967), by Franz Erhard Walther as “a white shirt,” “military uniform,” “handbag” and a lot of t-shirt images as visually similar. Balance (Nr. 26, 1. Werksatz) (1967), by Franz Erhard Walther as “a bag of luggage,” “clothes” and a lot of trousers images. Politisch (Nr. 36, 1. Werksatz) (1967), by Franz Erhard Walther, as “fabric.” Performance fabrics are almost always read as fashion clothes or accessories by AIs, which makes sense since many were worn by artists and/or the public. Here, interestingly, AIs actually agree with contemporary art, since most artists, curators and art critics do not consider these fabrics actual works of art either, but documentary remnants of a previous artistic experience.



#46 GLEICHZEITIGKEITSSTÜCK (NR. 23, 1. WERKSATZ) 1967 Franz Erhard Walther #46.jpg a white shirt 60%

military uniform 0 55%

Label Annotations: white 96% product 82% product 73% beige 62% product design 59% handbag 51%



Label Annotations: green 95% khaki 84% product 76%

the artwork is placed – a microsystem that has values and significations of its own. Almost every time there was an interpretation of a “window”, there was also a “TV monitor.” Although typical for the first and second groups of this list (Art as objects and IKEA shopping cart), identifying monitors also suggests a depth extension of the exhibited work. The works read as tables certainly were read as such since a framed painting can visually look like a table when seen from above. This recurring result can be seen as an invitation to view paintings from other perspectives, not only face-to-face or at eye level.

6. New temporalities:

When AIs do not understand the historical context of an artwork, it allows us to look at art as a

different kind of object – stripping it away from authorship and historicity. Readings such as these can help in the construction of new Art History narratives, helping to build new associations between societies from different regions and/or periods.

7. Personification processes:

Very often, images of artworks were read as actual people, or still, the performance of human tasks. Images read as people show how the AI’s understanding system does not differentiate between the concepts of representation and presence. Many sculptures (not necessarily human bodies) were also read as people, thus emphasizing the physical streng-



Labels: Art 89% Modern Art 89% Cushion 52% Home Decor 52%



Cushion 56%



Leisure Activities 66% Clothing 51% Evening Dress 51% Gown 51% Robe 51%

Dance 66% Dance Pose 66%

#10 OOGST ca. 1932-1937 Victor Dolphijn #10 .jpg a group of people posing for the camera 83%

Fig. 11: As seen in La Roche-Guyon (1909), by Georges Braque, and Vaas met Bloemen (1929), by Jan Sluijters, colourful paintings tend to be read as cushions, which reminds us how the visual content of works of art can expand beyond the museum and fit into more popular, household goods. Results such as these also relate to museum shops and their practices of transforming images of artworks into souvenirs.

th of large works. It was also interesting to note the human attributions related to some works, such as a painting “sitting down” -- a typical process of prosopopeia.

8. Visual similarities, new and more democratic possibilities:

The fact that AIs associate museum artworks with other images of similar visual forms in their databases⁷ results in a maximized mode of expe-

⁷ A considerable part of the visually similar images the Google Cloud Vision points to are in low resolution, which brings us to a document that is typical of our era. In In Defense of the Poor

Image, artist and researcher Hito Steyerl (2009) writes about the importance of analyzing these images: “Poor images are the contemporary Wretched of the Screen, the debris of audiovisual production, the trash that washes up on the digital economies’ shores. They testify to the violent dislocation, transferrals, and displacement of images – their acceleration and circulation within the vicious cycles of audiovisual capitalism. Poor images are dragged around the globe as commodities or their effigies, as gifts or as bounty. Poor images show the rare, the obvious, and the unbelievable – that is, if we can still manage to decipher it. (...) The circulation of poor images feeds into both capitalist media assembly lines and alternative audiovisual economies. In addition to a lot of confusion and stupefaction, it also possibly creates disruptive movements of thought and affect.”

Fig. 12: As with Oogst (ca. 1932-193), by Victor Dolphijn, images containing people are interpreted according to the objects that appear in the pictures. In almost every work including a human representation, results relate to their clothing and other personal objects – including moments when these objects were identified as opposed to the humans holding them. Such results serve as a reminder of the way in which building an individual’s identity in a capitalist society is shaped through the objects they possess and the properties of such objects. The same painting was also described as “a group of people posing for the camera” and as a possible “dance pose,” which takes us to the idea of displaying these products, and to the following category.



Leisure Activities 66% Clothing 51% Evening Dress 51% Gown 51% Robe 51% Dance 66% Dance Pose 66%

#10 OOGST ca. 1932-1937 Victor Dolphijn #10 .jpg a group of people posing for the camera 83%

Fig. 13: Javaanse Danser (ca.1921-1922), by Isaac Israëls, described as “a group of people posing for a photo.” Slapende Boer (1936), by Hendrik Chabot, as a skater doing tricks.



a group of people posing for a photo 54%

a man doing a trick on a skateboard 26%



Text: **башггб** ka Alphabet **89%** Text **89%** Art **74%**



water next to the ocean **71%**



a bird flying over a body of water **78%**

Fig. 14: According to Google Cloud Vision, Juan Gris' painting *Nature Morte* (1920) contains a Georgian word, which becomes "display" when translated into English by Google Translate. Augustusbrücke Dresden (1923), by Oskar Kokoschka, was summed up by Microsoft's AI as "water next to the ocean," adding more poetry to the scene. Gervan Elk's *Discovery of the Sardines* (1971) is described as "a bird flying over a body of water," completely reversing the image's idea of aridity.

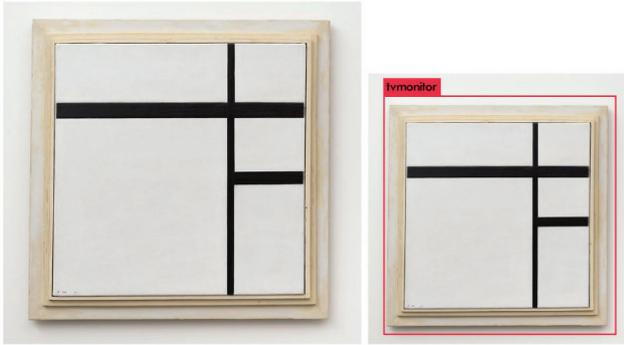
periments that have long characterized the study of artistic images. Many associative processes of these "intelligences" refer to practices developed by historians such as Aby Warburg and his *Mnemosyne Atlas*.⁸ Consequently, considering

⁸ UCLA professor Christopher D. Johnson writes about this Warburg project: "Begun in 1924 and left unfinished at the time of his death in 1929, the *Mnemosyne Atlas* is Aby Warburg's attempt to map the "afterlife of antiquity," or how images of great symbolic, intellectual, and emotional power emerge in Western antiquity and then reappear and are reanimated in the art and cosmology of later times and places, from Alexandrian Greece to Weimar Germany (...). In its 'last version,' the *Mnemosyne Atlas* consisted of sixty-three panels (Tafeln). Using wooden boards, measuring approximately 150 x 200 cm and covered with black cloth, Warburg arranged and rearranged, in a lengthy combinatory process of addition and subtraction, black and white photographs of art-historical and cosmographical images." More here: <<https://warburg.library.cornell.edu/about>>.

these results may be important for expanding this field.

9. Incomprehensible yet extremely poetic results (that we really like):

As is always the case with some works in any museum collection, many of the AI results were not fully categorizable into homogeneous groups of results. This shows that art and AI share a high load of unpredictability. These results also suggest a possible use of the AI readings in the expansion of the poetic layers of art, contrary to the productivist and efficiency-focused logic of those who argue that AIs must necessarily provide precise results.



door cabinet shelf blue sink room table

Tags (with confidence): wall 98% window 91% indoor 89% building 88%

#24 COMPOSITION EN BLANC ET NOIR II 1930 Piet Mondriaan #24.jpg a close up of a window 86%

<p>window frame</p> <p>(/supporting structure/framework/window frame)</p>	<p>78%</p>
<p>window sash</p> <p>(/supporting structure/framework/window sash)</p>	<p>63%</p>



#9 COMPOSITIE XXII 1922 Theo van Doesburg #9.jpg a close up of a door 63%

Fig. 15: Piet Mondriaan's Composition En Blanc Et Noir II (1930), was read as "a close up of a window," "window frame," "window sash" and "table." Compositie XXII (1922), by Theo van Doesburg, was read as "a close up of a door."



Label Annotations: sculpture 96% classical sculpture 88% statue 87% metal 80% bronze sculpture 80% ancient history 76% bronze 74% gautama buddha 70% temple 69% carving 64%

Labels: Art 95% Sculpture 95% Buddha 88% Worship 88%

sarcophagus coffin (/box/sarcophagus coffin)

62%



© Can Stock Photo



© Can Stock Photo



26/10/15 00:27

Fig. 16: Lehrender Christ (1931), by Ernst Barlach, read as “Buddha,” “sarcophagus coffin,” and was associated to images of Ancient Greek sculptures.

Fig 17: Google’s AI associated Constant Permeke’s *Dorp in de lente* (1936) with images of firewood, which suggests a later moment for the trees represented in this bucolic painting. The same AI related the frame of Martha Rosler’s video *Martha Rosler Reads Vogue* (1982) with the image of a younger woman – it could be a younger Rosler, but in fact is another artist, Spaniard Cristina Garrido.

Fig. 18: In Max Beckmann's painting *Winterbild* (1930), the readings of different AIs prove complementary. For Microsoft Azure Computer Vision, the work is "a painting sitting in front of a window." Seated where, exactly? Probably in one of the two chairs read by Darknet YOLO's AI. Similarly, the sculpture in the background of Carel Willink's painting *Schilder Met Zijn Vrouw* (1934) was read as a person standing near the couple.



Fig. 19: Some associations of images created approximations of consecrated works with artistic manifestations that are not considered "museum art." This is the case of Constant Permeke's *Zomer* (1932) compared by Google's AI to an amateur painting by an unknown artist. Jan Sluijters's *Landschap* (1910) was interpreted as a possible painting by a child, corroborating with the idea that modern art focused on abstract and unconscious experiences, as opposed to the academic realism of the late 19th and early 20th centuries.



The human layers of AI

Our methodology of attending to unexpected results also explored the human layers of Artificial Intelligence systems. This happened during the last week of the residency as Pereira and Moreschi worked together. As we were quite familiar with the new collection of artworks that emerged from the AI analyses, we decided to interact with Amazon Mechanical Turkers to better understand the human layers of AI and avoid the oversimplified idea that the AIs used were fully-automated. These workers are responsible for doing tasks that are still impossible for computers, such as classifying images inside predefined categories, thus creating the training

data for AIs. We surveyed a random sample of Turkers, asking them for descriptions of some of the collection's artworks, and whether they considered these so-called artworks to be art.

The experiences with the Turkers in this research are a continuation of previous explorations by Moreschi and Pereira on how non-specialized analysis can help to better understand and engage in the codified and elitist system of contemporary art. At about the same time as this research was developed at the Van Abbemuseum, we also carried out the project *Another 33rd São Paulo Biennial*, commissioned by the "33rd São Paulo Biennial". In an attempt to create an inventory of actions that broadened the unders-



street air airplane plane

Fig. 20: In Gus de Smet's painting *Moeder en Kind* (1922), an elephant (marked in blue) is read in the room by Facebook's AI. This was one of the whimsical cases where a work was read as a "mirror," referring to the idea that the understanding of an artwork is a reflection, a consequence of the way of thinking of those who look at it. Microsoft's AI went beyond the idea of object and added in André Cadere's conceptual work *B 12000030 =25= = 16X17= NOIR BLANC BLEU* (1975) the information "air" – the true context of art and all other things of this world. But, of course, since not everything is poetry in the AIs, Google has associated this conceptual work to the image of a... lamp.

tanding of the almost three months-long of this biennial, we carried out various experiments ranging from working with the AIs on historical photos to developing an audio guide with the biennial's cleaning, operations, and education staff. Like many Turkers, these individuals are not considered as experts in the art system. To consider their views, which are almost always ignored, is also a way of following the methodology of valuing understandings which, because they are not formally institutionalized, are usually deemed as mistaken views – something with which we obviously strongly disagree.

thms, as a way of raising awareness of what AI actually is. In the short video we made, we tried to use an accessible language (unlike much of the video art produced today) to show this infrastructure, explain the role of Turkers, and use their own voices to read descriptions they would give to images of artworks, thus foregrounding their contribution to AI systems. At the same time, we denaturalize Artificial Intelligences, as both AI and human Turker readings are shown to have similarities (as well as differences). This relates to academic calls for increasing literacy on datafication and its processes.

PEREIRA: Thinking about non-specialists in AI, we found it important to show the human labour behind these algo-



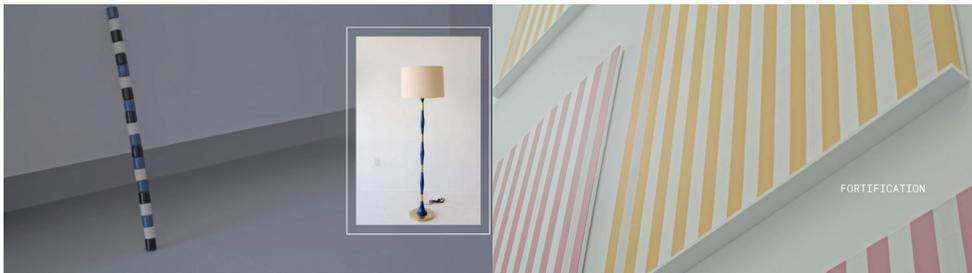
Google Cloud Vision	Microsoft Azure	Amazon Rekognition	IBM Watson	Facebook Detectron	Darknet YOLO	Amazon Mechanical Turk
What do you think	Description	Is this Art?	Have you been paid fairly?	Completion time (seconds)	Reward	
I think it is a classy nude painting	<ul style="list-style-type: none"> nude woman laying on bed with back facing viewer woman in the nude on a bed with back facing viewer painting of a nude woman on a bed with back facing viewer 	yes	yes	115	\$0.40	
It is very well composed and has a great palate of color	<ul style="list-style-type: none"> woman lies prone in bed woman resting, soundly a woman at rest 	yes	yes	132	\$0.40	
I think that the woman is ugly.	<ul style="list-style-type: none"> There is a woman naked, facing the bed, laying down. Laying down on white sheets is a naked woman on a bed. The woman without clothing is holding her arm over a pillow, while naked. 	yes	no	159	\$0.40	
Very sexual Sleeping	<ul style="list-style-type: none"> Sleeping on the bed. Very Nude-showing. Without dress sleeping on the bed. 	yes	yes	161	\$0.40	
It's bland.	<ul style="list-style-type: none"> Woman sleeping on couch Naked woman sleeping on couch Nude form from behind 	yes	no	124	\$0.40	

Fig 21: Jan Sluijters's painting *Liggend Naakt* (1931) described by 5 different Turkers. One of them thinks it is "very sexual," while another says "the woman is ugly". These descriptions exhibit sexist and objectifying visions of women's bodies and nakedness, which we also got to see embedded in the AI systems we surveyed. Other readings are more formal, yet poetic, such as "a woman at rest." It took no longer than two minutes for 5 different turkers to complete the task. They all agree: the image is Art.

Fig 22: Rosângela Silveira Jerônimo (general cleaning assistant of the Bienal) comments on one of the paintings by the artist Vânia Mignone, located on the 3rd floor of the 33rd Biennial, in the action Audio guide: more voices, part of the Another 33rd São Paulo Biennial project <<https://outra33.bienal.org.br/en/>>. © Filipe Berndt e Iriana Turozi



Fig. 23 e 24: Stills of the short movie *Recording Art*.



The results of the research: multiple cracks in the contemporary museum

In most of our collaborative projects we avoid making our research into a single final output. We believe that making this research into a single art object would invariably contribute to an excessive aestheticization and would limit the artistic potency of the work. The one-year experiment with the Van Abbemuseum collection and AIs resulted in this paper, a short movie, graphic materials such as museum labels with interpretations of works, as well as a possible exhibition project.

The short movie *Recording Art* is a research report that directly details our exploratory movements. But it is also video art, since once again, the mediation with the works was denaturalized through filming: many scenes of the film were made partially or completely with eyes shut to deconstruct the persuasive power of the exhibitions' displays. A similar denaturalization also takes place with one of the film's narrators, Lisa, one of the artificial voices of IBM Watson Text to Speech. At one point, Lisa asks the audience why she has a female voice before answering herself by showing how she can be understood as a digital representation of female objectification already present in society (Cross 2017).

Uma pesquisa de
A research by
Bruno Moreschi
Gabriel Pereira



Produção
Produced by
Fernanda Pessoa
Montagem
Edited by
Luara Oliveira
Fotografia
Cinematography
Rodrigo Levy

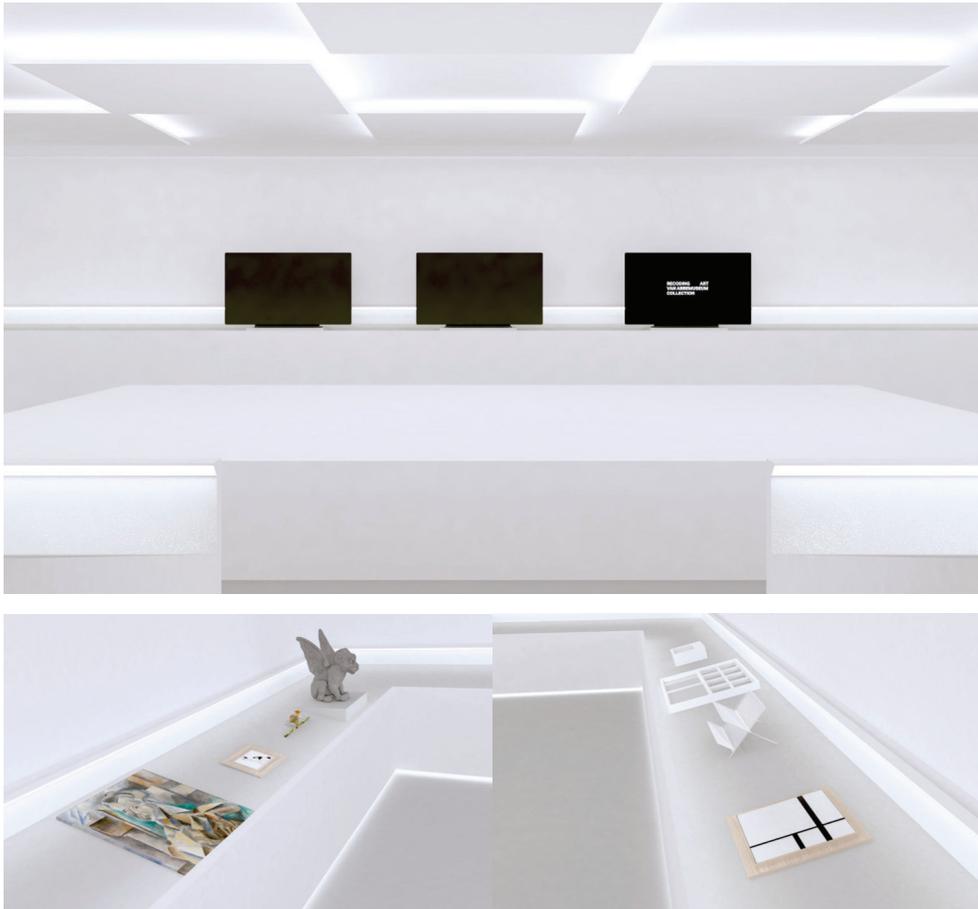
Projeto gráfico
Graphic design
Guilherme Falcão
Animação
Animations
Ricardo Monteiro
Som
Sound
David Menezes

Trilha sonora
Soundtrack
Wolfgang von Kempelen
Tratamento de cor
Color correction
Isabela Moura

RECODING ART

Fig. 25: Poster do short movie Recoding Art. Design by Guilherme Falcão.

Fig. 26, 27 e 28: 3Ds of possible exhibition proposal of the video Recoding Art: Van Abbemuseum collection.



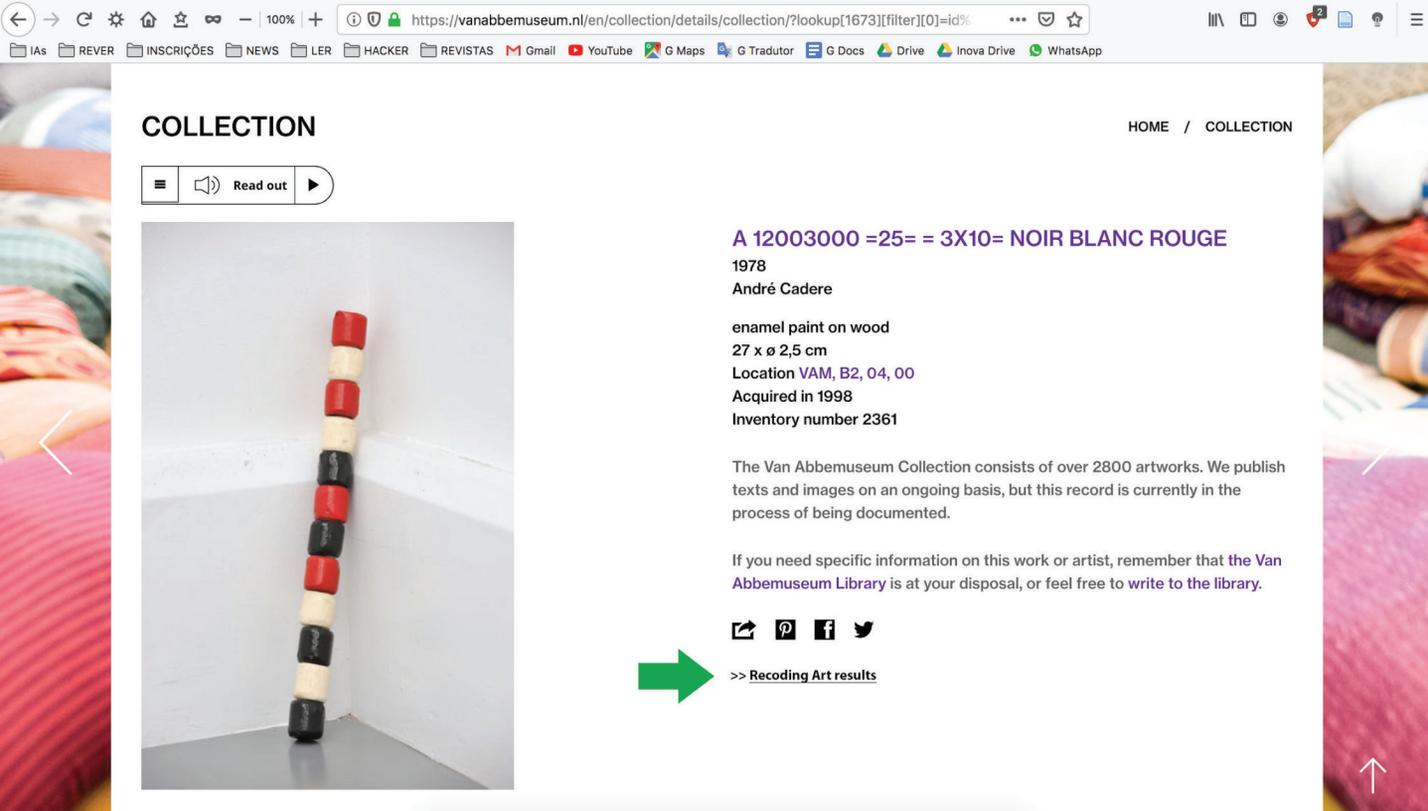
A possible scenario for exhibiting the film at the museum was drafted by collaborator Flavio Franzosi in 3D images (Fig. 25). In this exhibition room, works from the museum's collection are displayed side-by-side and at the same hierarchical level as some trivial consumer objects that appeared when AIs read the works in question.

Thus, Pablo Picasso's painting *Femme en vert* (1909) is placed next to a child's drawing, and Piet Mondriaan's *Composition En Blanc Et Noir II* (1930) relates equally to a dish drainer and a window frame. The video was also intended to be shown on three different screens in this room, each displaying one of its parts. While the movie is played on one of the screens, the other two

are inactive, representing the likely outcome were this video read by one of the AIs: it becomes an ordinary TV screen, and its support is valued over its narrative content.

The research results also materialized in the format of labels. They were designed to contaminate two spaces of legitimation of the works of the collection. The first is the exhibition space itself, with the insertion of these labels next to the official tags, in a kind of new informational layer of the works. They are no longer determined by the curators but by the commercial AIs and their databases.

The other space is the Van Abbemuseum website, in particular on pages showing images and



basic information on the works in the collection (see an example)⁹. The idea consists in providing site visitors with a link on those pages that, when clicked, displays the AI results label of the work in question (Fig. 27).

Offering these AI readings to the public has multiple objectives. Since they provide more tangible insights into these objects, the readings can be used as materials for the museum educators. They also help democratize the discussion on the problematic ways in which AIs are applied today in the most diverse layers of our society. Finally – obviously – the results are often comical – and a little humour in a contemporary art museum is always welcome.¹⁰

⁹ <https://bit.ly/3hoJ0E3>

¹⁰ An interesting experience may also be the creation of an alternative printed catalog of the museum collection with the official information about the works, but replacing the official images of the pieces with their “most similar image,” as found by the AIs in the internet.

This research can contribute to art education in museums. Through this text and the other results of the research, we propose that people, as exhibition visitors, experiment with the distanced look of AI as a way of critically thinking about the art system. We hope that it helps create new relationships, openings, and connections for non-specialists to explore art critically. Instead of museums using commercially available AI from Big Tech, uncritically, why not make more radical and creative uses of technology? We can critically use AI to open cracks inside of the museum for self-reflectivity, in a way that is characteristic of institutional critique.

As AI continues to grow, change and “improve,” we understand these results in their limitations: they are a snapshot of how they worked when we experimented with them. As increasingly data is produced in our everyday lives and interactions, and as companies hoard and process greater swaths of data to continually train

Fig. 29: The green arrow shows a possible place for the link with AI results of the work in question on the official Van Abbemuseum website. When the visitor clicks the link, a new page opens with tags like the following images.

Fig. 30, 31 e 32:
Examples of labels
next to the images
of the artworks in-
terpreted by the AIs.
Design by Guilherme
Falcão.



work, artist, year
BOERDERIJ
Heinrich Campendonk, 1919

data
A group of stuffed animals
building (79%)
poster (78%)
shadow box (61%)
different, skiing, bus, snow
possible racy (probably because there are women)

products
toysshop, retail store, computer, table

similar images



recoing art van abhemuseum collection



work, artist, year
ww
Corneille, 1960

data
A close up of an old computer
asphalt (62%)
brick (58%)
comic book (55%)
intersection (52%)
Thrift Shop (music by Macklemore & Ryan Lewis)
camouflage, ejection seat, electrical device

products
table, computer

similar images





work, artist, year
MY NECK, MY BACK CURVE SILENT
Karin Arink, 1993

data
a close up of food
a cat sleeping
invertebrate animal, animal with shell (paper nautilus, chambered nautilus, shellfish)
visually similar: Laocoonte, indian religious cadaver, straitjacket
possible a racy image

products
food product (vegetable), garlic (98%)

similar images



reedingart van abbenmuseum collection

these models, it also continually changes the way in which art is read. In our experience throughout our research, we have seen both minor and major changes, which we think point to the simultaneously productive and critical instability of AI and Art.

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