

Sexual Data

Deviations from the Scientific Image

ABSTRACT In their controversial study, Yilun Wang and Michal Kosinski claimed to have trained an artificial neural network to determine a person's sexual orientation based on their facial features. This kind of research can be strongly criticized for relying on outdated theories and potentially fueling surveillance capitalism. However, by focusing on textual information, criticisms of this study overlook the importance of the images used in such a scientific project. In this article I propose that the use of artistic research-creation can be valuable in questioning scientific images and the ideological assumptions they reinforce. My own project *Sexual Data*, for example, is a research-creation work that uses Wang and Kosinski's algorithmic images in a way that diverges from their original scientific context. The artistic operation allows us to appreciate that image beyond its scientific illustrative function, amplifying the possible meanings of the image.

KEYWORDS scientific image, sexual orientation, biometrics, neural networks, contemporary painting, artistic research

INTRODUCTION

This article exposes the artistic and critical approach taken to the controversial 2018 study by Yilun Wang and Michal Kosinski of Stanford University, where they claim to have developed a system of artificial neural networks capable of identifying people's sexual orientation from photographs of their faces. The Stanford scientists draw on outdated hormonal theories that explain the supposed association between sexuality and endocrine development, claiming that different hormone levels determine sexual orientation and that they would be visible in the body. Furthermore, they claim that these physical characteristics could be identifiable through biometric analysis. I will make a brief explanation of this study focusing on the presence of images that illustrate the scientific paper, since it is precisely in the image where the central problem of its discourse on an algorithmically identifiable sexuality is determined.

In what follows, I will briefly describe the different scholarly approaches that can be made to Wang and Kosinski's research, in particular those that refer to surveillance capitalism and the transparency of data on sexuality implicated in what has been called "the end of privacy," the implications of which range from the need to rethink the device of the homosexual closet, to the associations of sexuality categorized in data with algorithmic governmentality. Even if all of these considerations are fundamental, I believe that there is a shortcoming in the exclusively academic critique of these materials, which neglects a fundamental aspect of scientific papers: the presence of images that illustrate

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textual information. In response, I will postulate that creative practice (or research-creation) is another gateway to criticism with a significant contribution in this case. To this end, I will draw on ideas put forward by Bruno Latour and by Klaus Amann and Karin Knorr Cetina on the construction of the image in scientific contexts such as the one in Wang and Kosinski's paper.

This article will demonstrate precisely the critical capacity of artistic practice and its focus on the scientific image, through a discussion of the research-creation work called *Sexual Data*, which I produced during a 2018 residency at the Despina contemporary art center in Rio de Janeiro, Brazil. I will expose how the art project alters the algorithmic images in Wang and Kosinski's paper by distancing and diverting them from their original context, their specific meaning, and their scientific functionality. In a general sense, the artistic processing of the scientific images allows for the freeing of the image from its subjection to the scientific framework, returning to it a characteristic of every image, which is the plurality and openness of senses, a device open to the infinite possibilities of visual exegesis.

STANFORD, 2017: NEURAL NETWORKS TO IDENTIFY SEXUAL ORIENTATION

In 2017, various media outlets released the results of a scientific investigation led by Stanford academics Yilun Wang and Michal Kosinski, who claimed to have trained an AI to detect people's sexual orientation based on photographs of their faces, and to do so more reliably than humans.^{1,2} To accomplish this, they compiled a database made up of photographs of the faces of men and women scraped from the public profiles of a dating website.³ The subjects' sexual orientation was determined based on the gender of their desired sexual partner. The researchers used a deep neural network (DNN) to extract and score the depicted subjects' facial features, collecting $n=500$ values from each face. The dataset's subjects' self-reported sexual orientation served as the dependent variable, with the extracted scores (patterns) as independent variables used in turn to train, test, and refine a regression model intended to predict (classify) subsequent subjects' sexual orientation. According to the authors, this counteracts long-standing criticisms of physiognomy by demonstrating the decisive role that facial features play in determining the sexual orientation of the individual against other external characteristics. To visually substantiate their results and the different experimental procedures, they resort to a series of images that illustrate the scientific document. I will focus specifically on two of them.

In the first image they proceeded to determine which areas of the face were most important in identifying sexual orientation, as well as which facial characteristics they

1. Yilun Wang and Michal Kosinski, "Deep neural networks are more accurate than humans at detecting sexual orientation from facial images," *Journal of Personality and Social Psychology* 114, no. 2 (2018): 246–57, <https://doi.org/10.1037/pspa000098>.

2. A detailed follow-up of the arguments and debates raised by this study can be found in Greggor Mattson, "Tracking Wang and Kosinski's AI Gayface Controversy," <https://greggormattson.com/2017/09/12/tracking-wang-and-kosinskis-ai-gayface-controversy>.

3. Mattson, "Tracking."



Image of heat maps (2017) by Yilum Wang and Michal Kosinski showing the degree to which masking a given part of an image changes the (absolute) classification result, which is an indicator of the importance of that region in the classification. The color scale goes from blue (no change) to red (substantial change). Color-coded squares were smoothed using 2D Gaussian filtering.

most associated with homosexual and heterosexual people. The results, in the case of the former, can be seen in the images of the heat map extracted from the publication by Wang and Kosinski; the blue areas are inconsequential in determining sexual orientation, while the red areas are more decisive. A second selected image corresponds to an exercise of composite faces that presents different sexual orientations resulting from the average aggregation of hundreds of faces. Average facial landmarks are also included. In a certain way, each of the faces and points of reference expose the “ideal” face of each category. On the right in the image included here, the diagram of midpoints or milestones in homosexual and heterosexual faces is organized by gender. On the left we see the results of the four facial compositions in the gender and sexual orientation diagram.

It bears noting that despite the purported successes of the study, Wang and Kosinski provide little explanation for *why* they developed computer vision technology capable of identifying sexual orientation. The justifications that they do offer are largely circumstantial. First, they point out that sexual orientation is an “intimate psychodemographic trait” that people want to be able to visually detect in others despite it often being difficult for them to do so consistently, accurately, or efficiently. They also take refuge in the prenatal hormone theory (PHT), which associates homosexual orientation with abnormal exposure of the fetus to androgens. Their last justification, and probably the most cynical, is that the study is intended to alert political, technological, and LGBT activist communities to the predictive capabilities that facial recognition technology has regarding sexual orientation.

While this last reason is intended as an ethical justification for the study, its ethics are fraudulent. Scientists build a narrative that naturalizes the technical capacity of the algorithm as if it had been there before the scientific action. In a June 2019 Google

talk titled “The End of Privacy,” Kosinski himself compared the new era of algorithmic transparency to something akin to a “tornado.” In his words, “All of us might agree that tornadoes are bad, we would love to outlaw them, but they are a reality that cannot be banned. We must learn to live with that reality.”⁴ By describing their project as a “discovery” of the real and positive power of the algorithm and not as an active development of it by themselves as scientists, Wang and Kosinski try to avoid responsibility and protect themselves from any ethical questioning.

CRITICAL CONSIDERATIONS OF THE BIOMETRICS OF SEXUAL ORIENTATION

A number of academic considerations can be made in the face of Wang and Kosinski’s study that go beyond the first impressions about whether this AI really works or not. I will outline and detail some of these considerations and then give way to discuss the critical proposal stemming from the artistic practice and the novel perspective it brings to academic criticism.

The first premise is the positive existence of something called “sexuality” that is expressed by every human being in the form of a fixed, stable, and biologically determined “sexual orientation” toward an object of desire. Critical in this case is the corresponding belief that gender, and therefore individuals, exist within a binary framework. This premise has been dismantled, repeatedly, through constructivist critiques of sexual essentialism.⁵

A second critique of Wang and Kosinski’s research concerns its potential contribution to the machinations of “surveillance capitalism” through the capitalist extraction, production, and accumulation of data. According to Shoshana Zuboff, surveillance capitalism defines a new way of generating wealth.⁶ Zuboff argues that unlike other stages or formulations of capitalism, within the context of surveillance capitalism it is no longer nature but private human experience that is framed as a free source of raw material (data) to be extracted and commoditized under the banner of “behavioral surplus.” The factories of the twenty-first century are computational factories that collect, process, and analyze data in an effort to produce correlations between data, user models, and behavioral predictions. As Zuboff explains, the human experience becomes an exchangeable commodity in the marketplace. Companies can now buy and sell that behavioral information to generate user profiles that predict behavior for commercial purposes. It is those predictions that are sold in the market. Studies such as that of Wang and Kosinski, which attempt to determine sexual orientation based on facial image, could be complemented with behavioral data to generate even more “precise” user profiles and therefore become more attractive to companies, contributing to companies, reinforcing surveillance capitalism.

4. Michal Kosinski, “The End of Privacy,” *Talks at Google*, July 22, 2019, www.youtube.com/watch?v=VUwBeTgzbtU&ab_channel=TalksatGoogle.

5. Michel Foucault, *The History of Sexuality, Volume 1: An Introduction* (New York: Vintage, 1990).

6. Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (New York: PublicAffairs, 2019).

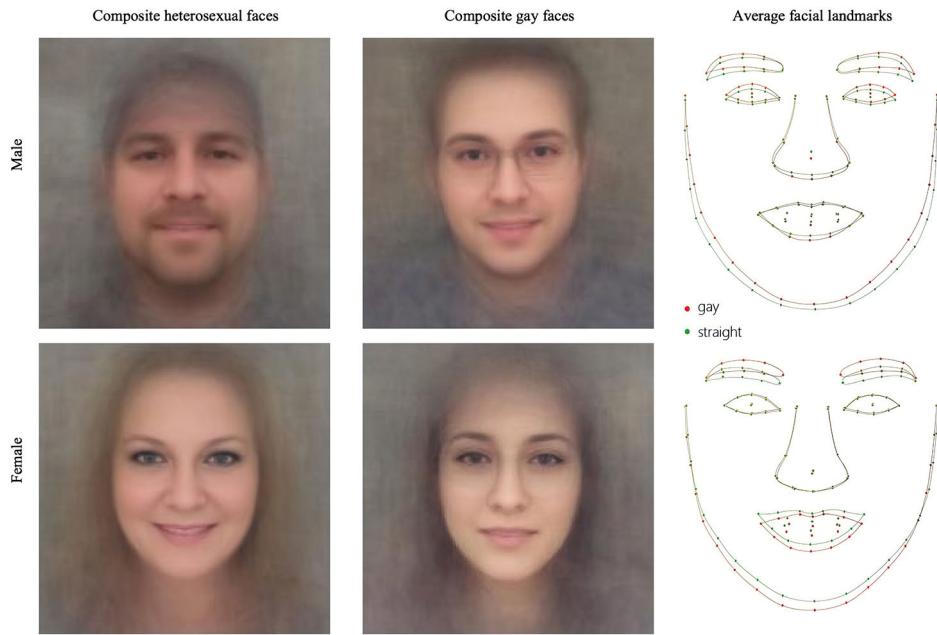


Image of composite faces (2017) by Yilum Wang and Michal Kosinski. Composite faces and average facial landmarks constructed by averaging classified faces as more and less likely to be gay.

As this suggests, the ability of Wang and Kosinski's systems to interpret a person's sexual orientation serves as a particularly potent example of the large-scale submission to the dynamics of computerized surplus value. A decolonial treatment of this analysis, as described by Nick Couldry and Ulises Ali Mejías, highlights how the extraction of data replicates the colonial modality at a global scale. For Couldry and Mejías, Zuboff's conceptualization of surveillance capitalism is important but neglects the constitutive relationship between capitalism and colonial power. As we know, the decolonial critique of capitalism has made it clear that the enrichment of capitalist world powers was only possible through the extraction of resources and systems of slavery that lasted for centuries in the European colonies. It is this foundational relationship between capitalism and coloniality that reappears in the new data extractive mode.⁷ Projects like Wang and Kosinski's reiterate these histories by transforming our bodies and identities into inputs for capitalist extraction and expansion. This might be understood as part of a larger process of informational colonization of the body and, in the case of Wang and Kosinski, sexuality.

A third critique concerns how the Stanford project puts one of the central principles of the modern homosexual experience into crisis, namely the institution of the closet and its epistemological framing of sexual identity as something that plays with a contradictory

7. See Nick Couldry and Ulises Ali Mejías, "The decolonial turn in data and technology research: what is at stake and where is it heading?," *Information, Communication & Society* 26, no. 4 (2021), <https://doi.org/10.1080/1369118X.2021.1986102>.

dilemma between public and private, the intimate and the exteriorized, the hidden and the revealed. For Eve Kosofsky Sedgwick, this epistemological contradiction of the homosexual closet transcends the specific homosexual experience, shaping many aspects of contemporary Western culture. Many of the major nodes of thought and knowledge in twentieth-century Western culture as a whole are structured—indeed, fractured—by a chronic, now endemic crisis of gay/straight definition.⁸

The algorithmic “capacity” to interpret individuals’ sexual orientation updates Foucauldian technologies of disciplinary introspection, in which the subject was submitted to the incitement of the discourse about himself to provoke the unveiling of the “I” as an effect of self-awareness. The algorithmic interpretation of sexual orientation would be post-Foucauldian insofar as it displaces the introspective and declarative action that the subject imposes when talking about himself. The hyperaccumulation of data and the qualitative transformation of knowledge that this entails and enables is ushering in a regime of information transparency. Within this context, human sexuality is framed as though it is self-evident to appropriately trained algorithmic systems. This implies the disappearance of the homosexual closet. It doesn’t matter whether this is true or false; what matters is that it is operational. Wang and Kosinski’s research aligns with this perceived shift in the conceptual paradigm of modern sexual identity in general and homosexual identity in particular from the closet to a regime of informational transparency. The intention here is not intended to corroborate algorithmic systems’ purported ability to expose even the most opaque and intimate parts of reality, such as human sexuality. Instead, the mode of transparency at play might better be understood along the continuum of “colonial transparency” denounced by Édouard Glissant as a regime of epistemological power that totalizes reality, producing it in its image and form.⁹ The transparency regime, analyzed from Glissant’s point of view, is actually a government rationale that operates by totalizing the dynamics of information.

This implies that if human sexuality has become transparent to algorithmic systems, it is because it is being produced in terms that are computationally recognizable and governable. From this fact follows an additional critical approach, although more tangential and speculative in relation to the study by Wang and Kosinski, regarding their involvement in the broader framework of algorithmic governmentality.¹⁰ Unlike Foucauldian governmentality, the algorithmic governmentality described by Antoinette Rouvroy and Thomas Berns is a government rationality that is based on the construction of large databases that go beyond statistical sampling techniques. Moreover, as Katjia de Vries explains, information management is no longer centralized in the State and uses new automatic information processing techniques that are constantly being modified

8. Eve Kosofsky Sedgwick, *Epistemología del armario* (Barcelona: Ediciones de la Tempestad, 1998), 11.

9. Édouard Glissant, *Poética de la relación* (Buenos Aires: Universidad Nacional de Quilmes Editorial, 2017), 143.

10. Antoinette Rouvroy and Thomas Berns, trans. Liz Carey-Libbrecht, “Algorithmic governmentality and prospects of emancipation: Disparateness as a precondition for individuation through relationships?,” *Réseaux* 177, no. 1 (January 2013): 163–96.

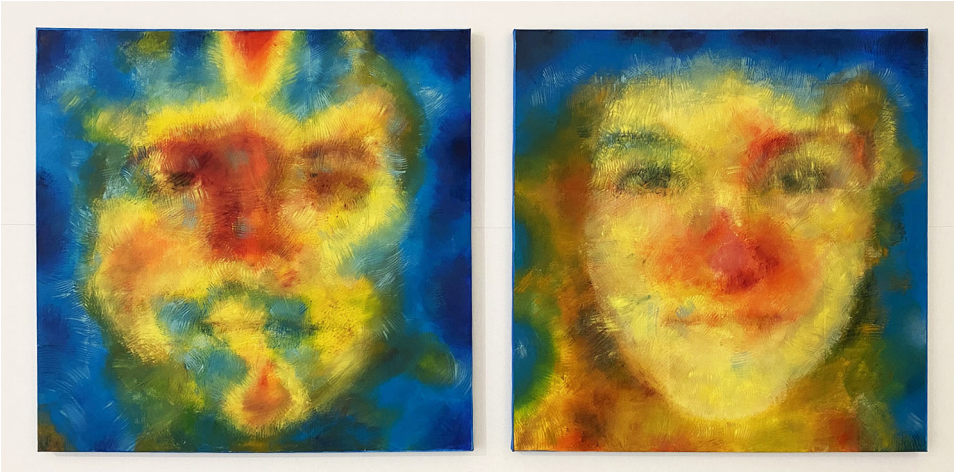
through the creation of flexible user profiles.¹¹ In the framework of algorithmic governmentality, categorization practices performed algorithmically through the use of big data, such as identification of sexuality, are not representative of the individual behind a user profile, but rather indicative of a technical massive construction. In this way, a category such as sexual orientation, within the framework of algorithmic governmentality, becomes transparent to the system, but at the same time it becomes more flexible and detached from the individual experience of each subject.

Wang and Kosinski's study, along with other efforts to predict sexual orientation using AI trained on big data, anticipates sexuality becoming "knowable" and manageable through the principles of algorithmic governmentality. Although the Wang and Kosinski study does not explicitly state this goal, the eventual implication here is that, because parameters of sexuality become "dividualized" as a result of their production through the tabulation of millions of individual data points from multiple sources, outright sexuality attributed to a user image or profile does not need to have a direct connection to the sexuality of the individual behind that profile, as it is produced by tabulating millions of individual data from multiple sources. In this way, the study by Wang and Kosinski not only follows the same logic described by Rouvroy and Berns, but it could become one more input for algorithmic governmentality.

SHIFTING THE SCIENTIFIC PICTURE

The preceding discussion demonstrates the critical insights that traditional academic research brings to bear on contemporary media culture. In the following section, I will detail a critical and creative intervention into Wang and Kosinski's scientific project that I undertook beginning in 2018, during my time in residence at the Despina contemporary art center. The intervention was relatively simple. It consisted of recreating enlarged versions of two of the scientific illustrations, lifted from the pages of the Stanford study and installed on the gallery wall. The images were reproduced through material translation, resulting in works composed of oil on canvas, cut vinyl, and objects nailed to the wall. My intention in what follows is to connect this creative proposal about the scientific image with a framework for academic discussion that has as its center precisely the scientific image itself. To do this, I will delve into a classic study by Amann and Knorr Cetina where they dismantle the construction process of these images in the context of working in a laboratory. The study by Amann and Knorr Cetina is important for my purpose because it focuses on a supplementary aspect of the production of scientific knowledge, which often appears neglected, allowing a series of questions to be established: Is the scientific image a neutral element, merely the visualization of the data that results from a study? What is the function or need for a textual academic document to also include these figures, photographs, or diagrams? Are there any power dynamics or relationships that can be dismantled in that visual device? Is it possible to criticize

11. Katja de Vries, "Identity, profiling algorithms and a world of ambient intelligence," *Ethics and Information Technology* 12 (2010): 71–85.



Heat maps (2018) by Felipe Rivas San Martín; courtesy the artist.

scientific images? My objective is to expose a concrete example of the way in which artistic practice can broaden the critical possibilities toward scientific discourse, specifically that which is contained in the study of Wang and Kosinski. On the one hand, this expansion is due to the fact that the object of the artistic project was precisely the images included in that paper, an aspect that is usually disregarded in critical studies of science. In this sense, it is an expansion of the critique toward the scientific image. On the other, it is because the artistic works that I will present use pictorial representation to broaden the reading possibilities of scientific images beyond their illustrative sense. That is, it is also an expansion of the scientific image itself.

In 1988 Amann and Knorr Cetina published the progress of an ethnographic study they started in 1984 in a laboratory at the Center for Molecular Genetics in Heidelberg, Germany. The objective of the study was to identify the work practices in the laboratory; they were specifically interested in *methods* of work such as how scientific results are produced and how those results are elaborated upon through visual representation of those results, published as scientific documents. Amann and Knorr Cetina distinguished between the data produced by the devices in the experiment and the “evidence,” which is the data that has been processed and published. Although this distinction might seem to replicate the problematized distinction between processed data and raw data, the authors preempt Lisa Gitelman and Virginia Jackson’s assertion that “raw data” is an oxymoron insofar as all data involves technical and cognitive processing, clarifying that it is more of a systematizing distinction. In this sense, the operative distinction between “data” and “evidence” serves Amann and Knorr Cetina in the evaluation of the different processes to which an image or data is subjected from the point at which it is produced by a technological device in a scientific context until that image or data is published as part of a scholarly paper.

The images that appear in academic articles published in specialized magazines are a unique type of image. They are highly regulated visual devices. The seventh edition of

the APA standards calls them “figures”: “All types of visual elements other than tables are considered figures in APA style. For example, illustrations, infographics, photographs, line or bar graphs, flowcharts, drawings, maps, etc. are considered figures.”¹² The figures are made up of different elements. First, a natural number that individualizes them in a limited serial sequence (between three and five images) is usually recommended. It must also have a title, and the image itself, which can be a graphic, photograph, drawing, or illustration. The figure may also include captions that explain the symbols used in the figure image, and finally a note that is a description of the image content and should only be included in cases where the described content cannot be inferred from the displayed image and the title.

As Amann and Knorr Cetina point out, this visual device, the figure inserted in the published scientific document, works in the form of “evidence.” To become a figure, that is, to retain the capacity to be evidence, these images go through active production processes: visual exegesis, collective interaction between researchers and the image through processes of “optical induction” that activate the analyzability of the image, or the imposition of an image as an analyzable object. In the words of Amann and Knorr Cetina, “Data become evidence only after they have undergone elaborate processes of selection and transformation.”¹³ And they continue to state categorically that “nearly all published images are carefully edited *montages* assembled from fragments of other images.”¹⁴ The authors clarify that they are not trying to affirm that the evidence is false or totally fictitious, writing, “Rather, this montage is a [scientific team] member’s way of visually reproducing *the sense of ‘what was seen’* which is an *upshot* of participants’ shop talk negotiations; an accomplishment of—not a precondition for—their work.”¹⁵ This would imply that editing is precisely the operation performed on the image to make what the scientists saw in it more evident.

As Latour affirms, the figures that illustrate the textual content of scientific documents must also be understood in terms of a device of power. For him, one of the fundamental pillars of the Western scientific world is based precisely on the ability of any aspect or element of reality to be contained and transported immutably onto a sheet of white paper, normally A4 size, easy and inexpensive to reproduce, combinable or comparable with others, a replica of the geometry of the two-dimensional plane. The hydrogen atom or a supercluster of galaxies can fit in a standard format of about 4 x 6 inches, flat, visible, and manipulable on a human scale. This device is an expression of an “optical consistency” as a specific type of visual reality that builds its own realism. The representation of a plant or an animal is visible thanks to ink printing on the sheet of paper, accompanied by images at different angles or parts of the same object in an approved size and ready to be seen and analyzed. This trivial change of scale seems innocuous enough, but it is the cause of most of the “superiority” of scientists and engineers: no one else deals solely with

12. Carlos Sánchez, *Guía Normas APA 7^o edición* (2019), <https://normas-apa.org/wp-content/uploads/Guia-Normas-APA-7ma-edicion.pdf>.

13. Klaus Amann and Karin Knorr Cetina, “The fixation of (visual) evidence,” *Human Studies* 11 (1988): 136.

14. Amann and Knorr Cetina, “The fixation of (visual) evidence”: 160.

15. Amann and Knorr Cetina, “The fixation of (visual) evidence”: 162.



Detail of *Heat maps* (2018) by Felipe Rivas San Martín.

phenomena that can be mastered with the eyes and held in the hands, no matter what, when, or where it comes from or what is its original size.¹⁶

The mechanism of power does not stop there; it is not just about putting an image on a sheet of paper. These forms are part of a gear or assembly that follows a series of legitimation processes. Images from Wang and Kosinski's paper were successfully put through these protocols, until they were later inscribed as ink on paper and published in a major journal in their area of study. Those images have become evidence. According to Latour, if someone wanted to counter these ideas with equivalent force, he would have to produce a new scientific article following a regulated format, create new images that contradicted the other images, and that article would have to be accepted and published in a journal or other academic publishing medium of high prestige and recognition. Of course, not everyone can produce this kind of knowledge.

16. Bruno Latour, "Visualisation and Cognition: Drawing Things Together," *Avant: Trends in Interdisciplinary Studies* 3 (2012): 207–60.

PAINTINGS: A BETRAYAL OF THE ALGORITHMIC IMAGE

My proposal was to reproduce pictorially two of the figures contained in the Wang and Kosinski paper. One of them is the heat map that expresses the areas that have been deemed the most and least relevant to predicting sexual orientation. The other is the set of prototypical faces divided by gender and sexual orientation, and accompanied by a diagram of facial landmarks.

The aforementioned operation implies a movement of corbels from the academic work to the gallery wall and at the same time an extension of the format of the figures. This transition implies processes of material translation, since what is installed on the wall is not a print on paper, but objects that, assembled, replicate or visually represent the figures: oil on canvas, nails, wire, and cut vinyl. I will comment on three aspects of this transition from the scientific image to its pictorial translation: one related to representation, another to decontextualization, and the third to the ideological criticism and the betrayal caused by the “pictorial translation,” opening a difference between representative and represented.

REPRESENTATION AS DECONTEXTUALIZATION

Figurative and referential pictorial production is generally understood as representation, that is, as a new presentation of something that already existed. The condition of a painting in terms of “representation” describes it as always tied to that referent and therefore subject to it. But it must also be said that all representation is always a presentation and that—as Jacques Derrida reminded us—the relationship between presentation and representation in painting contains an ambiguity and complexity whose power is precisely to produce difference. Taking into account their condition of presentation, there are some aspects that activate these paintings in relation to the image on paper.

Let us dwell briefly on this matter. Were the images that were in the scientific documents already “representations” of the textual content in a certain way? Here there is already a first problem with “representation.” The international regulations and standards of scientific academic publications are rigorous in terms of images. Not only do they limit their quantity (to, on average, no more than four or five images), they also require that these images not be “redundant” with respect to the textual content. Scientific images cannot “say” exactly the same thing that was already clearly stated in the text; they cannot be a literal repetition of it. On the contrary, the presence of scientific images in academic documents is justified because they exhibit something that could not be fully expressed with words. They grant a “plus value” by presenting a supratextual addition. In this way, the scientific figures are not representations, but presentations: they present something new, something additional that is not entirely contained in the text. Amann and Knorr Cetina call this presentation “surplus value,” which could also be described as a representation of scientific lack, or “evidence.” The algorithmically mediated figures in the paper by Wang and Kosinski fit this economy of the scientific image.

Following this first definition, and from the point of view of “representation,” these paintings would be the “representation” of the surplus value that the scientific image



The most likely faces of sexual orientation (2018) by Felipe Rivas San Martín.

exhibited or presented in the paper, or they could also be the pictorial representation of the representation of that textual lack. But if Derrida's argument is followed, painting is never just representation: "the representational paradigm is a failed paradigm, because each representation differs from the original and its meaning always exceeds the origin through the relay of difference, the gap between the painting and its object."¹⁷

Even the most figurative painting is always presented as a material object in itself that combines physical aspects (dimensions, supports, frame depth, texture of the canvas) with singular aspects (technical and pictorial gestures). All these elements make the painting "exceed" its motif and opens a differential gap between them. Seen in this way, being constructed as artistic works, the paintings whose motif is the scientific images of Wang and Kosinski's paper present something new that differs from them. The paintings "separate" the scientific image from its context and functionality, in order to give it new meanings.

The passage from the context of the page of the paper to the wall of the 2021 exhibition space dysfunctionalizes the figure as a coherent device in terms of scientific evidence, and refunctionalizes it as an aesthetic device under new protocols and semiotic-material connotations typical of the artistic object, particularly those associated with painting. The change of scale toward medium and large-format sizes accentuates this

17. Chung Chin-Yi, "Metaphysics and Representation: Derrida's Views on the Truth in Painting," *Rupkatha Journal* 2, no. 1 (2010): 69, 10.21659/rupkatha.v2n1.o8.

distance between the original image of the paper and the painting, in a sense similar to what Chuck Close's photorealist paintings did in the 1960s and '70s.¹⁸ In this move, the images lose part of their illustrative and utilitarian sense, becoming contaminated with the connotations of art. This decontextualizing operation typical of the artistic image was already present as a problem in the origins of the pictorial device of the fifteenth century (under the paradigm of the picture window or *trompe l'oeil* exercises),¹⁹ but finds its most committed and explicit expressions in the twentieth century with Marcel Duchamp's readymades or the situationist deviation. Several of these critical redefinition methodologies have been collected by the "guerrilla communication" concept coined by the autonomous a.f.r.i.k.a. group in 1997 as a rebellious alternative to the hegemonies of meaning imposed by mass culture, the media, and the cultural industries.²⁰ Even though the paintings represent the scientific images of Wang and Kosinski's scholarly paper, they have lost both their context and the specific and supplementary functionality of the scientific text.

TRANSLATION AND BETRAYAL

In the context of teaching academic and figurative painting, it is very common for the set of challenges involved in adequately representing light, color, textures, volumes, and shadows through pigments on canvas to be generically referred to as problems of "pictorial translation." The word "translation" is an analogy that describes painting as a kind of material language that must be transcribed as faithfully as possible to its referent. In this case, the reference is the algorithmic images in the paper by Wang and Kosinski.

But as the Japanese art critic Okakura Kakuzō pointed out at the time, behind every translation there is always a betrayal.²¹ A first aspect of this betrayal could be the ideological criticism directed at scientific evidence. The ideological critique of the painting highlights scientific evidence. By materially dramatizing representation as montage (nails, paint, wires in the wall), it becomes more evident that the scientific image is also the result of montages, as Amann and Knorr Cetina explained after their study in the

18. Ken Neil, *Really: towards a photorealist ontology of facticity: A thesis presented for the degree of Doctor of Philosophy*, unpublished diss. (Edinburgh: Edinburgh College of Art, Center for Visual and Cultural Studies, 2003), 183.

19. Svetlana Alpers, *Art of Describing: Dutch Art in the Seventeenth Century* (Chicago: University of Chicago Press, 1983).

20. Grupo autónomo a.f.r.i.k.a., *Manual de guerrilla de la comunicación* (Bilbao, Spain: Editorial Virus, 2000).

21. Okakura Kakuzō, *The book of tea* (New York: Putnam's, 1906), 48. References to this association are not few. According to Mark Davie, the well-known Italian adage "traduttore, traditore" appears for the first time in a collection of Tuscan proverbs by the writer Giuseppe Giusti published in the nineteenth century. See Mark Davie, "traduttore, traditore," <https://blog.oup.com/2012/09/traduttore-traditore-translation-translation>. The paradigm of translation as betrayal is also exemplified in Latin America with the figure of Malinche, a Nahua woman who was given as a gift to the conquistador Hernán Cortés, and with whom he had a son, considered the first mestizo in Mexico. Malinche's role as interpreter for Cortés and collaborator in the Conquest associates her role as translator with the betrayal of her people. In Spanish, this relationship is accentuated by the similarity of the words "traducción" (translation) and "traición" (betrayal).

microbiology laboratory. In fact, Wang and Kosinski's own study clearly reveals the multiple editing, deformation, and modification operations that images are subjected to in order to make the faces and their areas fit and coincide in the composite images.²²

I have the impression that there is another critical aspect to examine. Going back to Derrida's argument, the material presence of objects and paintings introduces a differential. While the scientific figure was restricted to its probative function, the pictorial figure opens up to a more figurative space of sensations and experiences. Perhaps it is about opening something that was already contained in the image on the paper, because as Amann and Knorr Cetina explain,

Images (visual evidence) do not function in the literature in the way one might assume; that is, by reducing the indexicalities of the text, by displaying the data unequivocally, by adding the certainty of proof which the text can only refer to, but not "show." Quite to the contrary. Images, perhaps more than texts, provide infinite opportunities for visual exegesis, thereby functioning to keep the discussion open, not closed.²³

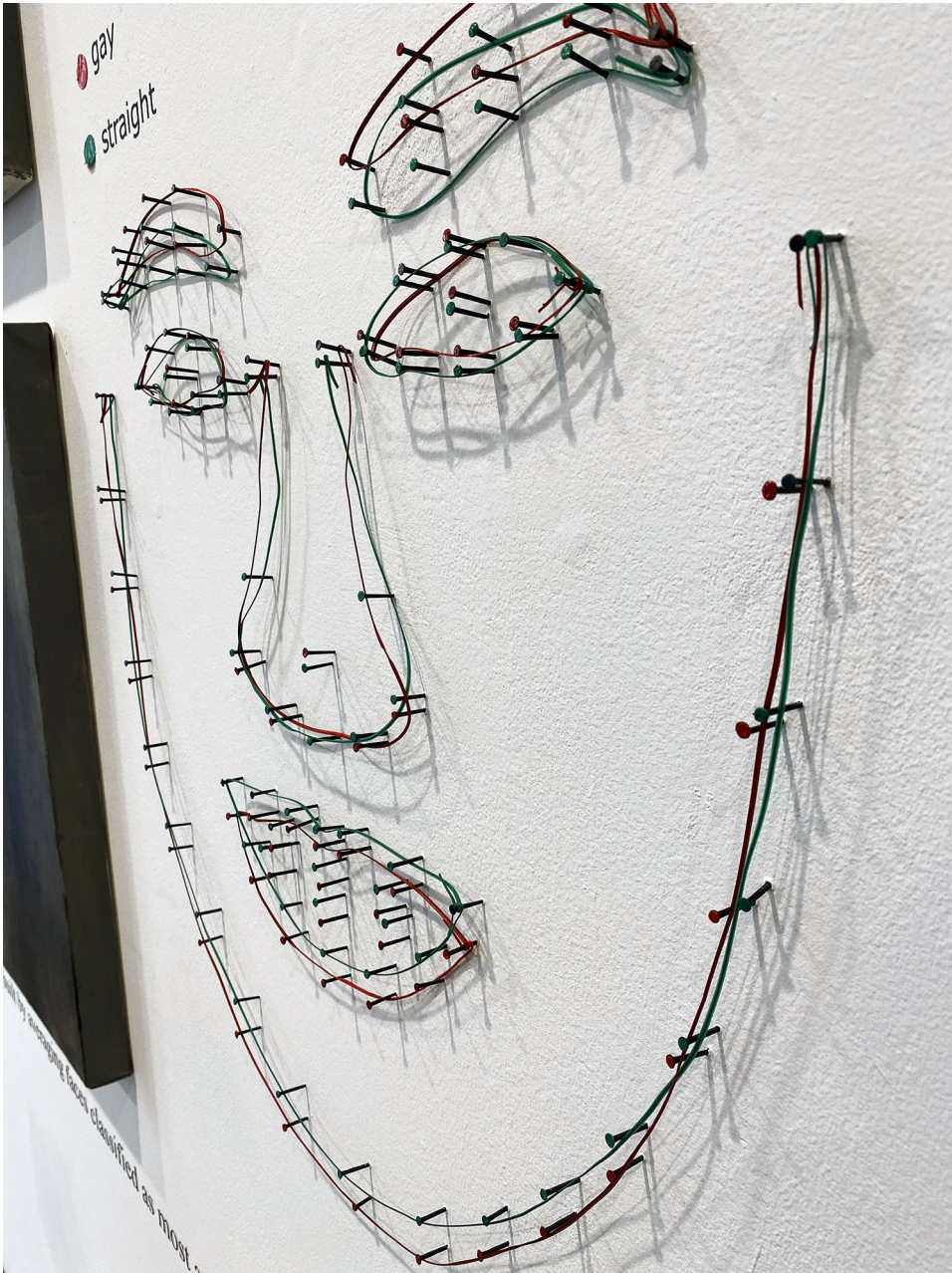
The paintings that represent the figures in Wang and Kosinski's paper are exhibited as a montage, making it evident that these scientific images were also montages. That is to say, they fulfill a critical function of "unveiling." And at the same time, these paintings are ambiguous and complex material and visual devices that distance themselves from the scientific image and its functionality. This distance caused by the pictorial device allows opening the multiple possibilities of visual exegesis that are typical of all images and that are constrained by scientific functionality. This displacement and opening caused by the artistic approach can give rise to critical perspectives that differ from the usual academic critical perspectives.

CONCLUSIONS

Throughout this article, I have described an artistic and critical approach to Wang and Kosinski's 2018 paper on a deep neural network that identifies sexual orientation in photographs of people's faces. This was accomplished first through a consideration of traditional academic research. Building on an introduction to Wang and Kosinski's study, I drew connections between their proposal and surveillance capitalism. I argued that their study positions the identification of individuals' otherwise private sexual orientation as an additional territory for computational colonization with the aim of extracting surplus value, in the form of behavioral surplus. I also gave an account of the political and conceptual consequences of a regime of transparency on sexual orientation, especially taking into account the device of the closet, as described by Sedgwick, that is, as one of the pillars of the modern homosexual experience. At the same time, a possible practical implementation of this and other mechanisms for identifying sexual orientation

22. Wang and Kosinski, "Deep neural networks": 19.

23. Amann and Knorr Cetina, "The fixation of (visual) evidence": 163.



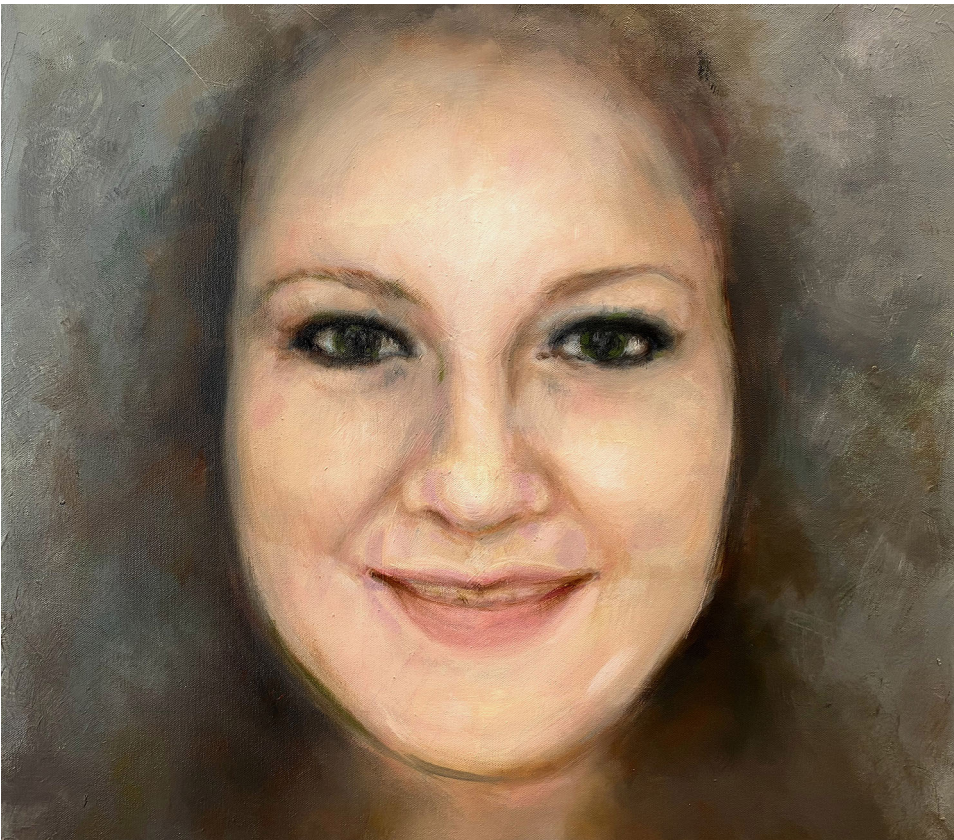
Detail of *The most likely faces of sexual orientation* (2018) by Felipe Rivas San Martín.

turns sexuality into yet another dimension of public and private life controlled through algorithmic governmentality as described by Rouvroy and Berns.

This focus on academic criticism was followed by a discussion of a research-creation project that I undertook as an artist-in-residence at the Despina contemporary art center. My intervention echoed the criticism that some authors have brought to a little-addressed element of academic work, namely the images and figures included in scientific

documents and publications. These images are typically presented merely as neutral visualizations of the data and, therefore, as immune to the possible repertoire of image criticism. And yet, not only must these images adhere to publishing norms, their function is often to complement the textual content in instances where the text is not enough. As a result, it is necessary that these images, like the research itself, undergo critical analysis. This was the purpose of the exhibition *Sexual Data* (2021 in Valencia, Spain), which approached Wang and Kosinski's paper precisely as an academic document, engaging specifically with its figured images. The artistic interventions included in the exhibition opened deviations from the scientific image; they offered three critiques of both the images included in the publication as well as Wang and Kosinski's study more generally.

In the first place, one can consider that the paintings that represent in medium and large format the images of the text of the Stanford researchers present a critical differential potential with respect to the dynamics of these images in the context of the paper. It is about a differential contained in painting as a material medium and that takes the scientific image beyond its function as "evidence." Derrida's argument can be followed to evaluate this differential capacity of painting, beyond the paradigm that would interpret a simple representation in them.



Detail of *The most likely faces of sexual orientation* (2018) by Felipe Rivas San Martín.

The gesture of painting the images of the scientific document echoes a long tradition in which art intends to dislocate the usual senses that structure the gaze. This genealogy includes, for example, the paradigm of the picture window or the trompe l'oeil of painting from the sixteenth century, up to the most recent guerrilla communication. By applying this methodology of art to scientific images, it is possible to provoke a dislocation, since the scientific figure loses its contextual functionality, just as was done in the paintings that represent the figures in the paper by Wang and Kosinski.

In this connection, I was reminded of the concept of “pictorial translation,” an idea frequently used in art workshops to describe the technical challenges of figurative painting. As an effect derived from the also usual relationship between translation and betrayal, it is possible to understand painting as a type of betrayal of its referent. The paintings that were part of the artistic project betray the referent of scientific figures. On the one hand, they exhibit themselves as montage and pictorial artifice, allowing the notion of montage to be shifted toward the algorithmic images of which they are a representation, evidencing that the figures in Wang and Kosinski’s paper are not neutral images but also montages. At the same time, the paintings betray their referent as they distance themselves from it, separating and decontextualizing themselves from the scientific document. The paintings lose the complementary functionality they had in the framework of the Wang and Kosinski document.

All these considerations show that the artistic project alters the algorithmic image of Wang and Kosinski’s paper by distancing it from its original context. The pictorial of these new images adds all the possible drifts that are typical of the artistic object, allowing the liberation of the multiple meanings that every image has and that were constrained by scientific functionality. Ultimately, this research-creation/artistic practice can also have a broader impact on media criticism by dismantling the complicity between scientific discourse and the operability of the images that illustrate and reinforce that discourse. ■

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