

This is a section of [doi:10.7551/mitpress/14471.001.0001](https://doi.org/10.7551/mitpress/14471.001.0001)

# The Perception Machine

## Our Photographic Future between the Eye and AI

By: Joanna Zylinska

### Citation:

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DOI: [10.7551/mitpress/14471.001.0001](https://doi.org/10.7551/mitpress/14471.001.0001)

ISBN (electronic): 9780262376631

Publisher: The MIT Press

Published: 2023

The open access edition of this book was made possible by generous funding and support from MIT Press Direct to Open



The MIT Press

## Introduction: Photo Flows in the Perception Machine



**Figure 0.1**

Joanna Zylinska, grid of images automatically produced through a text-to-image generator known as DALL-E 2. Trained on text-image pairs, the DALL-E 2 model responded to the words from the book's title ("The Perception Machine Our Photographic Future Between the Eye and AI"). Image grid obtained on second attempt, as variations to one of the four images produced as a first response to the book's title. The AI-generated image echoes a famous avant-garde poster from 1924 by Aleksandr Rodchenko, which featured a black-and-white image of a human eye, two cameras, and a doubled face of a young man, and was accompanied by the inscription *Кино глаз* (KINO-EYE). Interestingly, the DALL-E 2 model seems to have treated the inscription it created as an image rather than text, as evident by the ever more fascinatingly absurd variations it came up with. June 2022.

More images are being produced, shared, and seen today than ever in history. We are constantly photographing and being photographed, with imaging machines large and small capturing our every move. In the publicity for their Galaxy S21 Ultra 5G phone Samsung have announced that they are enacting "a revolution in photography";<sup>1</sup> Tomáš Dvořák and Jussi Parikka have proclaimed, through the title of their recent edited collection, that photography has gone "off the scale";<sup>2</sup> while Lev Manovich, whose Cultural Analytics Lab and the accompanying book have investigated

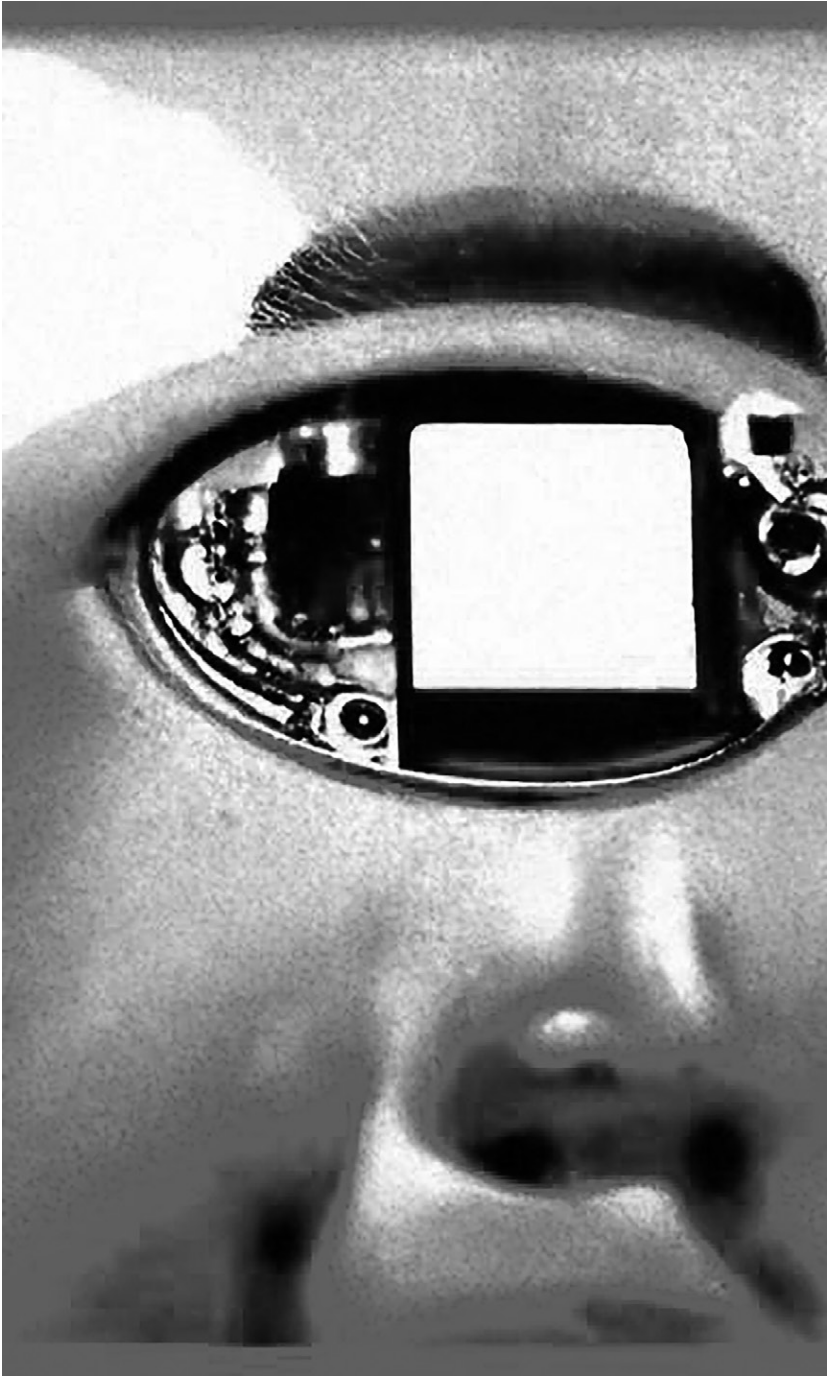
how we can see one billion images,<sup>3</sup> has declared: “Photography is young again.”<sup>4</sup> In the meantime, Andrew Dewdney, codirector of the Centre for the Study of the Networked Image at London South Bank University, has published a book with a title that was also a make-no-mistake exhortation: *Forget Photography*,<sup>5</sup> while Ariel Goldberg and Yazan Khalili, cochairs of the photography department at Bard College, have declared: “We Stopped Taking Photos.”<sup>6</sup> Something is therefore clearly going on with and around photography.

Picking up on those opposing statements and affects, the notion of “our photographic future” that frames this book is something of a dare. It probes this polarized decisiveness around photography and other forms of mechanical image-making, while suggesting that photography cannot be so easily forgotten or abandoned because it has been actively involved in the shaping of our present onto-epistemological horizon—and its technical infrastructures. Nor can photography be simply replaced by the more encompassing (and perhaps more technically accurate) concept of “imaging,” as there is so much invested in it, both on the level of platform capital and human affect. But the postulate of “our photographic future” also entails a reckoning with the fact that, as part of its technical and social activity, the photographic medium itself is undergoing a transformation. Its role as a printed memento or incontrovertible evidence of fact largely confined to the dustbin of history, it is currently being reconfigured in a way that has profound significance for our individual self-image, our society, economy, and politics. The distinction between image capture and image creation is now increasingly blurred—in photogrammetry, computational photography, CGI, or algorithmic image generators trained on photographic images (figures 0.1, 0.2). And so, even though this book is about what could be described as “imaging after photography,” this *after* does not signify an overcoming but rather a form of mediation, a process that does not erase the technical, historical, or affective traces of its formative

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### Figure 0.2

Joanna Zylinska, image automatically produced through the text-to-image art generator known as NightCafe, using the VQGAN+CLIP method. The algorithm responded to the words taken from this book’s title. Image obtained on first attempt. No modification, except for conversion to black and white. June 2022.



medium. The concept of “the perception machine” describes the evolving architecture of those photographic mediations.

Importantly, and in line with the widespread retention of this term in computation, the imaging industry, and, last but not least, its social use, my working definition of photography—even if applied to images whose method of production exceeds pure “writing with light” to embrace calculation and selection—is itself both residual and experiential. I call a given cluster of processes and practices “photography” if it remembers and resembles photography—and if it looks and feels like photography to the human observer. Photography therefore serves in this book as what Yanai Toister has called “a resemblance concept,” whereby “photographs form a family group, with many overlapping sets of features, but there is no single set of features common to all the ‘things’ to which the word photograph pertains.”<sup>7</sup> He adds: “photography is better served if understood as a set of media.”<sup>8</sup> What does this remediated photography *look* and *feel* like to the human observer? And what kind of analytical framework might we adopt that would help us understand its transformation? To work toward answering these questions, it is worth recognizing that the interrogation of photography’s (*and* the photographic) future highlights a number of concerns regarding not just the status of a specific industry or media practice, but also some larger, or we might even say planetary-level, concerns about our human positioning in the world and our relationship with technology, at a time when our very existence is being increasingly challenged by attempts to envisage what comes next. A climate collapse? Cross-species extinction? Another pandemic? A planetary war? Death by AI? Or maybe a sunnier tomorrow, for all of us?

This may seem like too big a leap right now, but I want to suggest that, by pondering, with Dewdney and others, whether photography has any future, we are actually using this specific cultural-technical practice to ask whether everything else we know—including us humans as a species with particular cultural exigencies and technical affordances—will soon be over too. We are therefore using photography, a *par excellence* practice of imaging and imagination (i.e., a practice of copying, making likenesses, mapping, making mental pictures, and ideating), although not always in a fully conscious way, as a conduit for asking bigger questions about our own situation in the world. What also precipitates this inquiry is the fact that some of

the boldest and most surreal forms of generating novel images and forms of imagination are being offered today by algorithmic agents, be they GAN networks or more complex generative AI models such as DALL-E. Imaging and imagination are therefore now part of a planetary computational architecture described by Benjamin Bratton as “the stack.”<sup>9</sup>

Frequent climate “events,” experienced either as media events or as more immediate existential disasters, are inextricably coupled with the remediation of the environment as a computational media ecology. This state of events has resulted in a situation where humans in different geopolitical locations are less and less able to see themselves as inhabitants, or (if they belong to a more privileged class) as citizens, of the world. Instead, we are all being interpellated to recognize ourselves as planetary beings, unanchored and dislodged, a realization which involves having to deal with the fact that, as Dipesh Chakrabarty puts it, the planet “remains profoundly indifferent”<sup>10</sup> to our existence. There exist an abundance of images to visualize this condition, from space photography through to satellite and drone images depicting environmental devastation. It is in this sense that photography as a practice of imagination, representation, and visualization can be read as a case of what Amanda Lagerkvist has described as “existential media,” i.e., media that are capable of accounting for “the thrownness of the digital human condition.”<sup>11</sup> This perspective analyzes digital media as an existential terrain which is irreducible “to the social, the cultural, the economic, or the political”<sup>12</sup> even if it remains intertwined with all those domains. This existential mode of enquiry also prompts us to ask what comes *after* the human, while inviting us not just to imagine but also to image it. In the light of the current developments around artificial intelligence (AI), this interrogation is particularly urgent. It must be highlighted right from the start that “AI” functions in this book not just as a technical term but also as a discursive-affective network of practices and meanings. On a technical level, the term predominantly refers to outcomes of computer and cognitive science research in machine learning, a field that trains computers in statistical data analysis and inference-making so that their performance ends up looking “intelligent” to a human. AI thus conjures, in the public and media imagination, an illusion of sentience *and* sapience, enveloped in a misty cloud of existential promises and threats—or what I previously called “machine visions and warped dreams.”<sup>13</sup> Artificial

intelligence is itself a form of Big Dream, but one that has material consequences for our technical and sociopolitical existence.

Not insignificantly, all those contradictory pronouncements about photography that began this introduction were made in 2021: the second year of the global Covid-19 pandemic and the start of what is now being called the Virocene. It was a year of accelerated mediation, when we all appeared *as images* to one another, on Zoom, MS Teams, or Skype, while feeding—and feeding off—the insatiable global data machine with photos, memes, visualizations, and data points. Yet 2021 was just a catalyst for longer-term processes of imaging, imagining, capturing, tracing, and shaping that have been organizing our knowledge horizon while furnishing us with a sense of self. Driven by AI, machine vision, computational image rendering, and VR, these processes call for an in-depth investigation into what it means for humans to live surrounded by image flows and machine eyes.<sup>14</sup> “Photography” serves in this book as a thought device that will help me visualize, name, and analyze those processes. The key problem I thus want to investigate concerns *the future of mechanically produced images that come after, resemble, and are still called photographs—and the future of us humans as producers of, and as beings produced by, such photographic and after-photographic images.*

With the current outpouring of images, we can suggest that photography is encountered by humans principally as a flow, be it on social media, on multiple screens in urban spaces, or as flickering data points in computer vision databases. Yet photographic flows do not *just* flow: they often slow down, come to a halt, or wrap around us, creating photo-envelopes which offer a particular way of encountering and sensing the world. As well as foregrounding the “flow” aspect of the medium, it is therefore important to highlight that photography *is experienced* in the first place, that it comes *to us* as an experience—and also, more crucially, that it envisages and forms experiences. Photography triggers and shapes emotions, drives our percepts, informs our cognition, and contributes to the emergence of human consciousness. We should note here the possibility of other modes of experiencing photography than just the visual, with a broad range of sensory experiences activated in the photographic process between a variety of human and nonhuman agents. My understanding of photography here borrows from Vilém Flusser’s theory of the image, in which it is “the technical image itself that is the message.”<sup>15</sup> In-forming, or giving form, becomes a way of organizing the chaos of the world in an attempt to slow

down entropy—to halt the end of the universe. This position extends the earlier claims about the formative role of photographs in our lives made by writers such as Roland Barthes, Pierre Bourdieu, or Susan Sontag.<sup>16</sup> But it also recognizes that the primary role of images today, including photographs, is informational. Information here is understood in the classic engineering sense outlined by Claude E. Shannon and Warren Weaver in *The Mathematical Theory of Communication* as being nonsemantic,<sup>17</sup> with the communication model applying to different agents, human and nonhuman. The principal meaning of an image is *that there is an image*, and that it is being transmitted, rather than that it is an image of, say, a cat (although the content of images does of course matter to individual humans). The majority of images are now processed quickly: they are not subject to prolonged contemplation or interpretation. Yet the photographic image today is not just seen—and it is most certainly not always seen by humans. It is also always tagged, categorized, copied, coded, transmitted, networked, and platformed as part of the operations of the perception machine. The photographic image therefore *does* something (e.g., relates to another image or data sequence, triggers the execution of a command) within the machine network, rather than just meaning something to humans. It is, as scholars increasingly recognize, *operational*.

The theoretical impetus behind my interrogation of “our photographic future” also comes from the work of Flusser—not just his well-known texts on photography but also his thought-provoking book *Does Writing Have a Future?*<sup>18</sup> Flusser answers his own question in the negative, foreseeing a time when books become an obsolete medium, to be replaced with technical images (such as photographs). Yet rather than worry about our imminent illiteracy, Flusser is intrigued by the coevolution of humans with our media. It is this “media-genealogical” aspect of his analysis that I aim to extend in this book by looking at the future of the photographic medium, at the narratives about its future—and, more broadly, at the role of photographs and other technical images in mapping *our human future*. My overarching proposition is that not only does photography *have a future* but also that it actually *is the future*. As we increasingly experience reality *with, through, and as* photography, the photographic medium functions as an active agent in shaping both “us” and “the world.” I am picking up here on process philosopher Henri Bergson’s intimation that “matter is an aggregation of images,”<sup>19</sup> with this aggregation (or *ensemble*) itself forming “a



universe.”<sup>20</sup> Importantly, this is more than a poetic turn of phrase. As I will show through the course of my argument, in its recognition of the formative role of imaging in the constitution of human consciousness as well as machine intelligence, contemporary neuroscience has strong Bergsonian undertones. But my goal in the book is also to propose that the current technoscientific conjuncture is radically altering the constitutive elements of this universe, while reprogramming or even redesigning the technical and sensory parameters of both ourselves and the world.

Drawing on research in computation and neuroscience, the book examines this posited “photographic future” through the lens of perception. In proposing to read the anxious exuberance in the current discourse on photography as a manifestation of both sociopolitical vulnerability and deeper existential anxiety, I will look at the altered practices and technologies of seeing, recording, and making images of the world—and at the increasing role of automation in image-making. With this, I want to examine some of the ways in which photography as both discourse and practice is actively involved in the reconfiguration of human perception—and in the emergence of a machinic network of perceiving agents whose image-making role has serious consequences for our own self-image, our view of the world, and our vision of the future. Perception is defined here as a way in which sensory information is selected, processed, and interpreted. The book’s argument is thus premised on the recognition of the key role of visuality in human perceptive experience, but I also challenge and expand upon this understanding by working with what has become known as an “ecological model of perception”—a model that is fundamentally multisensory. In the process, I investigate the role of photographs and cognate images as devices that help us see, sense, and grasp the world. I also recognize, following Steve Anderson, that “humans in urban environments inhabit a shared visual field with a broad array of scanners, sensors, and algorithms.”<sup>21</sup> In other words, the focal point of my discussion is provided by the problem of *how we frame the world with mechanically produced images—and how such images and their mechanical infrastructures frame us*, i.e., how they frame our consciousness, cognition, and our whole cortico-corporeal apparatus, but also our individual and political subjectivity. The framework of existential media will allow me to examine the photography of “our photographic future” as “both the priors and the limits, the frame and the edge, the building blocks and the brinks of being.”<sup>22</sup> Taking as a given the message

of critical posthumanities that *it's not all about us*, my analysis is located against the wider context of image uses and actions, many of which bypass us humans. The concept of “the perception machine” offered in the book encapsulates this wider context, while also serving as an answer to the (implicit) question about whether our future will indeed be photographic, and, if so, what it will revolve about, feel like, and look like.

The notion of the machine, still apt for our increasingly algorithmic society, borrows from Gilles Deleuze and Félix Guattari’s conceptual expansion of this term beyond its technical capabilities to encapsulate its social dimension.<sup>23</sup> “The perception machine” is an aggregate, assemblage, or ensemble of the technical, the corporeal, and the social. Design-wise, it is therefore more like a system than a single object. There are multiple, albeit interwoven, levels of meaning to what this concept stands for in the book. To begin with, it has biological connotations, signifying the system of perception in human and nonhuman animals. The perception machine is also a technical machine understood as an apparatus, or indeed a camera.<sup>24</sup> Perception here is equivalent to image-making, a process of the temporary stabilization of the optical flow that involves apparatuses such as cameras, telescopes, and scanners, but also the wider technical<sup>25</sup> infrastructure supporting those devices. The perception machine thus also names a machinic ensemble of perceiving and image-making agents. Further on, the term has connotations of the Foucauldian *dispositif* and Flusserian *apparatus*, whereby it stands for the bigger sociopolitical setup. Or, as Goldberg and Khalili put it even more explicitly, referring to the violent use of images in attempts to consolidate national power: “The state is the ultimate camera, the camera that eats all other cameras.”<sup>26</sup> The concept of the perception machine—which simultaneously functions as an image-making apparatus—thus highlights the interlocking of scientific and cultural discourses in the production of photography *and* photographs. It also foregrounds the production of subjectivity and objectivity as functions of all kinds of images.

In *The Vision Machine*, a survey of visuality of which my main title is a critical transposition, Paul Virilio argues that, “because the technical progress of photography brought daily proof of its advance, it became gradually more and more impossible to avoid the conclusion that, since every object is for us merely the sum of the qualities we attribute to it, the sum of information we derive from it at any given moment, the objective world

could only exist as what we represent it to be and as a more or less enduring mental construct."<sup>27</sup> In one of its conceptual iterations, the perception machine can therefore also be said to stand for nothing less than what we modern humans, in our attempt to delimit a dawning sense of planetarity, have called "the world."<sup>28</sup> This "global" version of the perception machine comprises various mechanisms responsible for the world's accruing production, in the form of images, for us humans—and, increasingly, for other machines. Virilio's *The Vision Machine* provides an important analysis of the transformation of seeing and visibility in the twentieth century, from the technology of warfare in World War I, which turned vision into visualization, through to the industrialization of vision, which shifted the majority of activities unfolding within the field of visibility from humans to machines. This transformation of vision into a primarily machine-based process was accompanied by the "automation of perception" as a result of developments in artificial intelligence.<sup>29</sup> Significant as it is, Virilio's argument is also steeped in metaphysical dualism, postulating as it does a clear shift from more organic and seemingly pretechnological vision to its machinic counterpart: "the relative fusion/confusion of the factual (or operational, if you prefer) and the virtual; the ascendancy of the 'reality effect' over a reality principle."<sup>30</sup> He interprets this shift primarily in terms of disorientation and loss. While a political critique of the automation of perception is very much needed—and Virilio does indeed offer it by looking at the visual technologies of war and the automation of vision in propaganda and marketing, and at the mechanization of justice in video-enabled courtrooms—his ontological critique of the changes to vision ends up conserving the view of vision as both human and humanist. Borrowing some of his concepts, I will proceed with an understanding of machines as encapsulating organic and nonorganic components, as changing over time, and as constitutively shaping the human sensorium in different ways. The change from "vision" to "perception" in my own machinic rhetoric will allow me to outline a more multisensory and more agential model of corporeal and sociopolitical relations.

Drawing on ideas from Bernard Stiegler and Gilles Deleuze, we could thus say that vision and perception have *always* been machinic—but they have not always been mechanical or computational. The analysis of the working of these machines, and of their mechanics, in the current historical period, at different scales and levels, and of the role of photography and

other forms of mechanical image-making in sustaining their operations, will shape the argument of my book. Importantly, even though I recognize that, in its agency, destination, and communicative value, photography is to a large extent nonhuman, the line of the argument pursued here is that photography does not need to be antihuman. Indeed, it is in challenging the antihumanism of the perception machine as an image- and world-producing apparatus that a *better* photographic future will be sought throughout this book.

While it is conceived as a stand-alone volume, *The Perception Machine* develops from my 2017 book *Nonhuman Photography*.<sup>31</sup> I argued there that the dominant analytical frameworks in photography theory—those coming from art history (where photography was seen as a series of individual artifacts displayed in a white cube), photojournalism (where photography was identified with professional practice), or social theory (where the focus was on everyday photographic practices)—were inadequate for capturing the contemporary photographic landscape. The concept of “nonhuman photography” proposed in that earlier book was thus a provocation aimed at challenging those dominant frameworks, with their inherent humanism premised on the commonsense assumption that photography was a human practice. At a time when the majority of images were not just being taken by devices whose technical parameters far exceeded human vision, such as CCTV, drone media, endoscopy, and satellite cameras, but were even not being made for the human viewer, the humanist discourse of photography needed correcting, I thought. The concept of nonhuman photography thus referred to photographs that were not *of*, *by*, or *for* the human. Yet “non-human” for me was not opposed to the human—and it most certainly did not mean that no humans were involved in photography. There has been a nonhuman side to photography since its inception, as seen in Fox Talbot’s description of the medium as “the pencil of nature,” the early links between photography and geology as parallel modes of making impressions, or the fact that the majority of everyday images created across time, be it for family albums or social media—landscapes, portraits, celebrations, food—have been a product of technical and cultural algorithms, and not just human intentionality and free will.

The present volume picks up on this recognition of the nonhuman agency of photography, but *it returns more explicitly to the problem of the human*—although, to qualify, this is a human rethought through posthumanist

critique. Raising a number of ethicopolitical questions about our existence in the world of high-tech capitalism, the progressing automation of many spheres of life, increasing threats of global pandemics, rising inequality, and the economic and ecological crises, it foregrounds, as signaled earlier, the ontological problematic of existence as such: of us humans, of our ways of doing things in the world, of our media and communication networks and platforms—and, last but not least, of photography as a medium that captures all those global unfoldings while capturing us humans in multiple ways. Yet the power of photography is not just ontological but also epistemological: photography, especially in its networked and platformed guise, radically reshapes our ways of knowing the world and ourselves in it. Critically engaging with current research in cognitive psychology and neuroscience, the book thus deals with the problem of perception and cognition, while offering a cultural analysis of the making of worlds *and* worldviews—and of images that are part of those worldviews.

From this outline it may seem that my key conversational partners in the discussion about our photographic future are Western male philosophers and media theorists. And this is indeed where the conversation *begins*. This choice of my starting point is partly in recognition of the legacy and significance of those particular debates on media, technology, and the image, but my motivation is somewhat more mischievous than that. I come to this tradition as an unruly daughter—a Goneril or Regan without the malice, or a Cordelia without the death wish—with an aim of reweaving the texture of the established discourse on technology and the image with my own silicon thread. In the process, I hope to make the still rather masculine field of media philosophy a little more my own. Starting from the book's title—a Virilio-Flusser hybrid with a twist—I aim to cut across positions, postulates, and postures to open a different mode of thinking about media objects and practices. This mode of thinking will also involve *making*. Departing from the traditional philosophical method of eschewing the present, doubting the example, and remaining suspicious about praxis, my media-thinking about the present has for a long time also been a form of media-making—and of future-making. With this I aim to enact a media philosophy less in the genre of “me-theory,” and more as a process of interweaving, interconnectedness, and intellectual as well as bodily kinship made up with words, images, and corpora of various kinds.

I will be accompanied on this journey by other critical, feminist, and decolonial writers and artists, such as Ariella Aisha Azoulay, Donna Haraway, Ewa Majewska, Safia Noble, Griselda Pollock, Gayatri Chakravorty Spivak, and Hito Steyerl. Immersed in both critical thinking and feminist sensibilities, the concept of the perception machine outlined in the book is thus ultimately an attempt on my part to offer a more nuanced, more ecological, and less paternalistic understanding of what it means to live in a world which is increasingly dependent on the production and creation of mechanical images—and whose own self-image, increasingly expanded to a planetary scale, is a product of such images. Yet this is not a book written from a planetary perspective, with its eye high in the sky: it emerges instead from among wire tangles, image torrents, and data flows, coming together as it does amidst the matter of media, the piles of techno-rubbish, the threat of organic and nonorganic viruses. The book is driven by an awareness that “the planet” does not care, but also that this lack of care need not—indeed should not—be mutual. Its approach could be described as feminist eco-eco-punk, which is not an aesthetic stand but rather an ethical position on how to live in a media-dirty world.<sup>32</sup> A critical feminist sensibility shaping the argument of this book will build toward a proposal for “a planetary micro-vision for a world in crisis” outlined in the last chapter.

The echolalia-sounding concept of “eco-eco-punk” riffs on variations of the science-fiction genres that merge punk’s irreverent aesthetic with a creative mobilization of canceled futurity, while providing it with the relevant cultural imprint: from cyberpunk, steampunk, and biopunk through to greenpunk and, last but not least, ecopunk.<sup>33</sup> From the original punk, eco-eco-punk inherits “an adversarial relationship to consensus reality.”<sup>34</sup> From cyberpunk it borrows a gritty, dystopian view of the techno-future in which one gets by by making do. Eco-eco-punk encapsulates the irreverent and self-sustaining spirit of punk, but it also reworks cyberpunk’s sense of general alienation into a form of active and creative engagement with the world’s decaying systems and infrastructures. In foregrounding the intertwined aspects of unfolding *ecological-economic* disasters, eco-eco-punk deromanticizes the decay while giving the situation a political twist. It also multiplies punk’s agency, beyond the heroism of the singular male outcast-savior.

Eco-eco-punk involves acknowledging the huge—and hugely complex—ensemble of images, data, and infrastructures, but refusing to hold any of it in my hand, mind, or eye as *just* an object of analysis. Instead, it involves countering with what it means to inhabit the perception machine. This eco-eco-punk engagement with a media-dirty world will result in a necessary, and indeed programmatic, conceptual tangle. This is why the book will develop a cluster of concepts with which to understand photography, imaging, and the wider image ecology today. Aside from the said “eco-eco-punk” and the book’s organizing concept of the “perception machine,” throughout the course of the book I will outline a “philosophy of after-photography,” design an “AUTO-FOTO-KINO,” propose a “planetary micro-vision” that will involve producing some “loser images,” and rethink photography as a form of “sensography.” This knotty and “messy-media” approach has already been manifested in the visual preface to this book, which features a series of collages made by myself in an attempt to show, and allow readers to sense, what the book is about. The images themselves are media-dirty, just like the wider environment from which the argument of the book flows.

And thus, while my argument in the book is theoretical, it is also an attempt to think *about* and *with* images seriously, an endeavor that reflects my ongoing mode of working with words and images in my interwoven scholarly and artistic practice. I recognize and embrace the formative role of linear signs, aka writing, in establishing a community of knowledge and knowers, and thus forming a historical consciousness. But I am also aware of the separate affordances—affective, perceptive, and haptic—that seeing and making images, including photographs, carry. The images this book engages with have been drawn from a wide set of registers and practices, although they have all been mechanically produced, in one way or another. Some of them are works identified as “art,” not so much because I consider art a privileged mode of studying phenomena, but rather because I value the expertise and labor of art schools, art institutions, and art curators in teaching us to notice things worth noticing, while stabilizing the flows of images into meaningful experiences. Image-based projects recognized as “art” therefore serve here as conceptual shortcuts, showing us something as worth seeing—although many of the projects I look at definitely have more of an “infra-artistic” character.<sup>35</sup> My own creative practice involving image-making appears in the argument at times, cutting

through the linear text with an attempt to see and convey something in a different mode.

With this, my goal is to acknowledge the richness of the universe of mechanical images being produced today, by a variety of human and non-human actors, and aimed at a variety of human and nonhuman recipients. The image cloud that envelops the book's creation—and that envelops us all—is thus also being made from social media feeds featuring anything from photojournalism to selfie journalism, Internet memes, Instagram ads, Snapchat ephemera, Tinder faces, dick pics, lol cats, online shopping grids, security cameras' facial records, and QR codes, to list just some of the streams and particles that constitute it. All those image flows can also be reconceived as transfers and exchanges of seemingly limitless amounts of image data. I am thus interested not just in images but also in their infrastructures—from the human architecture of our eyes, brains, and whole bodies through to the image-making equipment, the flows of electricity in different bodies and media, the wired and wireless connections between media systems, the machine learning algorithms and the neural networks they work across, and, last but not least, the data centers and server farms hosting them.

Even though the rationale for trying to understand the perception machine is ethical, it does not offer a prescription for how to live. Instead, it makes some modest propositions for living in, with, and as images, in the planetary context by developing an awareness of a condition that has been enveloping us with an increasing intensity and speed. The model of the machine adopted in this book embraces both the regulatory and promissory aspects of this concept as outlined in the work of Deleuze and Guattari. As Maurizio Lazzarato puts it with reference to those thinkers' key idea, "The machine is open in many ways because it is a relation and a multiplicity of relations: a relation with its own components, with other machines, with the world (its own associated milieu) and with humanity."<sup>36</sup> The indeterminacy of those relations, which is an inherent aspect of all relationality, means that they can always be redrawn, beyond the machine's push toward performativity, efficiency, and exploitation—in the direction of something we do not recognize yet. Exploring possibilities for making things better, the book is thus ultimately oriented toward activating the radical-critical potential of the distributed and embodied perception machine. To put it in more figurative terms, *it is about photographing ourselves a better future*—for human and nonhuman "us."



The problem of a photographic future, which also entails dealing with the future of photography and everything else in the world, frames chapter 1. After offering a historical overview of the medium's exuberant life and frequently predicted demise, this chapter investigates to what extent the incessant posing of the question about photography's future can be seen as a reflection of our human anxiety about the disappearance of our subjectivity, and of our picture of ourselves and the world—or even, *tout court*, about the disappearance of ourselves *and* the world. Engaging closely with Flusser's writings as well as my experience of teaching photography and creative media, the chapter enquires whether we can mobilize photography to enable a different modality of capturing perception, knowledge, and self-knowledge, beyond the linear structure of the book.

Chapter 2, "A Philosophy of After-Photography," discusses the affective and material forces that drive the photographic medium today—from the desires of its users, who are constantly making and sharing digital snaps while being captured *as* images, through to the (il)logic of machine learning databases, which is increasingly shaping our self-image, society, and politics. The philosophy of after-photography outlined in this chapter goes beyond the focus on the objecthood of the image-making medium to highlight *a time "after photography."* It offers a mode of thinking and seeing for a future that *will be photographic*—for better or for worse. Demonstrating that it is through the discourses of neuroscience and computation that photography has been framed and reframed through its different technical iterations, the chapter assembles a stock of conceptual building blocks to be used in the construction of "the perception machine" in the chapters that follow.

Chapter 3 takes a proof-of-concept approach to explore the working of "the perception machine." It proposes that the practice of screenshotting ("cutting" into the media flow of a video game by a player to collect photo-like mementos from the game) can be seen as paradigmatic of human perception. Screenshotting can also become a way of retraining players' eyes, bodies, and minds in both seeing the world and understanding perception better. I suggest that this experience generates new forms of sensation and cognition for experienced gamers as well as game novices. It offers valuable lessons for future developments in modeling human vision in machines. The argument of this chapter is built around images from my artwork

*Flowcuts* (2020), shot in two postapocalyptic video games, *Everybody's Gone to the Rapture* and *The Last of Us*.

Continuing with the interrogation of imaging and perception, the argument of chapter 4 focuses on the problem of machine vision—as well as highlighting the problem *with* machine vision. The chapter's title, "From Machine Vision to a Nontrivial Perception Machine," draws on two science papers by authors who made a significant contribution to the debate on the relationship between humans and machines: Heinz von Foerster's 1971 article "Perception of the Future and the Future of Perception," in which the concept of a "non-trivial machine" is introduced; and Gerald M. Edelman and George N. Reeke Jr.'s 1990 article "Is It Possible to Construct a Perception Machine?" I engage with these papers in an attempt to construct a conceptual scaffolding for a non-Google-led theory and praxis of machine perception while interrogating the role of photography and other forms of imaging in industry efforts to get machines to "see." After analysis of bias and other forms of discrimination in machine vision, and the wider infrastructures that underpin it, the chapter concludes by postulating that a nontrivial perception machine must be both antiracist and counterimperialist.

While the previous chapter explored some possible ways of not just constructing but also reprogramming the perception machine, chapter 5 zooms in on one particular technology of vision in which visual culture theorists have traditionally sought a perceptive opening: cinema. In his essay "After Cinema," Lazzarato argues that cinema is "no longer representative of the conditions of collective perception."<sup>37</sup> Any smartphone can now shoot photos at a speed of video—and it can shoot video in photo resolution. Building on Lazzarato's argument, I discuss the increasing overlap between still and moving images in digital practice. I also propose the concept and practice of AUTO-FOTO-KINO as one possible enactment of emancipatory agency from within the algorithmically driven image complex. The chapter discusses my reworking, with the help of AI, of the best-known photofilm, Chris Marker's postapocalyptic *La Jetée*, as a gender-fluid feminist counter-apocalypse. Through this, I explore some ways of creatively engaging automation to offer a different vision of the future.

The above-described experiments lead me to pose, in chapter 6, a question about the possibility of photographing the future. Starting from the TV

series *Devs* (dir. Alex Garland, 2020), which visualizes the problem of predicting the future by capturing an image of it, I move on to the mobilization of photography and other forms of imaging in constructing predictions in different disciplines. Mindful of the fact that “the image” is a cornerstone of the neuroscientific rhetorical register, I look at the use of this concept in the theories of consciousness outlined by two leading researchers: Antonio Damasio and Anil Seth. Specifically, I analyze the role of images in Damasio’s and Seth’s respective theories of perception, and the possibility of conceptualizing consciousness as a person’s orientation toward the future, which involves making images of that future. The automaticity of this process, be it in mental-image making or in the production of mechanical—or, to use Flusser’s term, technical—images of the future, leads to the discussion of predictive technology, widely applied in areas such as weather forecasts, stock markets, epidemiology, and consumer behavior.

The book’s final chapter involves an actual attempt to image a (better) future. Engaging with planetarity as an important trope in contemporary cultural and visual theory, it offers two alternative ways of performing it, encapsulated by two case studies. The first one investigates still and moving images of picturesque locations, taken by drones and collected on social media. The focus of my critique is not on the machinic aspect of vision per se or on its aerial elevation, but rather on the assumed heroism of the eye-in-the-sky drone acrobatics. In response, I propose a case study from my own art practice, titled *Feminist with a Drone*. Presented in the form of images and field notes, the work explores ways of mobilizing drone technology to enact a less masterful and less heroic viewpoint. Working against the register of “amazing” views produced from high in the sky, I outline, with a nod to writer-artist Hito Steyerl, the concept of “loser images” as a feminist rejoinder to the dominant aerial aesthetics. I then consider to what extent the production and curation of such loser images can be deployed toward an enactment of a different relationship to our habitat.

Summarizing the book’s findings, the conclusion suggests that photography is changing in its encounter with other media technologies (computers, sensors) to become a form of “sensography.” These changes lead to a reconfiguration of perception on an individual, societal, and infrastructural level. I then pose the question of whether this ever-enclosing image envelope, recently dubbed “the metaverse,” can be more than another business venture for Global Tech.

To access the images from my practice discussed in the book and the two films, visit <https://www.nonhuman.photography/perception-machine>, or scan the QR code below for direct access.





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The MIT Press would like to thank the anonymous peer reviewers who provided comments on drafts of this book. The generous work of academic experts is essential for establishing the authority and quality of our publications. We acknowledge with gratitude the contributions of these otherwise uncredited readers.

This book was set in ITC Stone Serif Std and ITC Stone Sans Std by New Best-set Typesetters Ltd.

#### Library of Congress Cataloging-in-Publication Data

Names: Zylinska, Joanna, 1971- author.

Title: The perception machine : our photographic future between the eye and AI / Joanna Zylinska.

Description: Cambridge, Massachusetts : The MIT Press, [2023] | Includes bibliographical references and index.

Identifiers: LCCN 2022050332 (print) | LCCN 2022050333 (ebook) | ISBN 9780262546836 (paperback) | ISBN 9780262376624 (epub) | ISBN 9780262376631 (pdf)

Subjects: LCSH: Photography—Philosophy. | Digital images—Social aspects. | Image processing—Digital techniques. | Artificial intelligence.

Classification: LCC TR183 .Z955 2023 (print) | LCC TR183 (ebook) | DDC 770.1—dc23/eng/20230405

LC record available at <https://lcn.loc.gov/2022050332>

LC ebook record available at <https://lcn.loc.gov/2022050333>

10 9 8 7 6 5 4 3 2 1