12. Just-Beyond-Human-Vision Photography

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The invention of microscopes, telescopes, and infrared and x-ray photography are commonly considered as successful attempts to extend the physiological limitations of human vision. These technological developments can be said to emphasize our superiority as human beings, who are capable of developing devices to overcome limitations of our sense of sight. Despite all these devices, however, most of the photographs we take on a daily basis merely copy the things we see with our bare eyes in what we call "the visible world." We apparently do not want to take photographs of our surroundings beyond the things we are able to see ourselves, and therefore it is enough for these images to serve us only as an *aide-memoire* (of what we saw). For this reason, producers of standard cameras for amateurs limit the spectrum of cameras to the limitations of human vision.[1] A rarely discussed byproduct of the various conventions of photography – including limited frames, one-eye perspective, still images, and limitation in visible spectrum – is in fact that these confirm to us the superiority of our vision in comparison to what is seen by the camera and represented in photographs.

In this chapter I put these various tendencies to experience superiority into perspective through a focus on what lies "just beyond" our limited vision. My argument aims at increasing our awareness of the limitations of human vision by means of discussing just-beyond-human-vision photographs in processes that center on bringing something into existence in a contact zone, thus potentially allowing a meeting of human vision and vision by animals or machines. I will develop this concern by discussing near-infrared (NIR) photography by Martine Stig, which I briefly relate to the *Animalcams* project designed by Tuula Närhinen. The artistic research of both artists prompted me to question how

1 Information derived from my interview with Martine Stig in Amsterdam on March 13, 2024. For more on this issue, see my discussion below in this chapter.

"just-beyond-human-vision" photography in their human-nonhuman projects increase awareness of our human vision's limitations, rather than just extending our vision.

I will also link up these two case-studies with concepts derived from interdisciplinary studies. Specifically, I address "post-optic," as coined by Carolyn L. Kane, "phasmagraphy" coined by Elke Reinhuber, and "nonhuman" and "after-photography" as discussed by Joanna Zylinska. Finally, I rely on a study about animal eyes by Michael F. Land and Dan-Eric Nilsson to support my visual analyses of the artistic research projects by Stig and Närhinen.

NIR-photographs in a Contact Zone between Human Vision and a Post-optic World

12.1 Martine Stig, Near, edition#4, 2023, NIR-photograph, inkjet print on paper, 14.8 x 21 cm.

Courtesy of the artist.

When looking at *Near, edition#4*, a photograph by Dutch artist Martine Stig, one will first perceive a grey-pink color covering a whole photograph, in which

only some lines and shadows indicate parts of a human body, including a pattern of veins (Fig. 12.1). Close-up observation of this image does not provide any more clues. On the contrary, it becomes increasingly harder to relate such concentrated effort to what we are used to see in close-ups of human skin with our bare eyes. How does this perception change after we are informed to be looking at a NIR-photograph? In order to understand how Stig's NIR-photograph critically relates to infrared photography, I first provide a brief historical overview of its discovery and subsequent use, after which I invoke several theoretical concepts to provide additional insights into this particular photograph.

In "Beyond Human Vision: Towards an Archaeology of Infrared Images" (2018), film and visual culture theorist Federico Pierotti and art historian Alessandra Ronetti offer a historical survey of infrared images for laypersons.[2] Motivated by the increasing popularity of the use of digital infrared in thrillers and war movies, they begin their historical overview of analog infrared in the early nineteenth century when scientists started to measure the color spectrum as an electromagnetic wave. After setting the boundaries of human vision (400–700 nanometers), the next step was to push the boundaries of the visible spectrum into both directions: toward the infrared and ultraviolet. The infrared that is invisible to human eyes has a longer range of wavelengths (700 nm-1 mm) than that of the visible spectrum, while it is commonly divided into a far portion (3,000 nm-12,000 nm) and a near one (700 nm-3,000 nm). Stig uses near-infrared in the range of 700–1,000 nm, or, to be more specific, 850 nm wavelength in the case of *Near, edition#4*.

Pierotti and Ronetti are particularly interested in the period of the 1930s to the 1960s, when the first films for recording infrared photographs were released (with a sensitivity range of 680–860 nm) by big companies like Kodak and Agfa. These films were mainly used in military, technological, and medical fields. Recently, some artists have critically interrogated this history, such as the Irish artist Richard Mosse, who produced IR-photographs and moving images on analog 16mm-film, such as in *The Enclave* (2013), which focuses on surveillance, and on roots of IR-photography in military industry. *The Enclave* presents uncanny effects, resulting from the bright pink colors as striking and fictional aesthetic characteristics while presenting conflict situations in

2 Federico Pierotti and Alessandra Ronetti, "Beyond Human Vision: Towards an Archaeology of Infrared Images," *Necsus* (Spring 2018); issue *Resolution*, unpaged. Https://necsus-ejms.org/beyond-human-vision-towards-an-archaeology-of-infrared-images/ (accessed March 6, 2024).

Congo. From an equally critical perspective, media theorist Carolyn L. Kane has analyzed the twenty-first-century use of digital infrared, and she notes that this has become part of debates about the role of information algorithms for the subjects of vision. In "Digital Infrared as Algorithmic Lifeworld" (2014), she describes the use of it as: "a system of control used to regulate bodies, realities, and experiences …, using progressively pervasive and intrusive means."[3] Quite different from Mosse's and Kane's explicit response to surveillance and systems of control, Stig's NIR-photograph *Near, edition#4* rather encourages contemplation about near infrared as just-beyond-human-vision.

If the bright pink colors in Mosse's work and the grey-pink color in *Near, edition#4* seem to relate to "red" in the term "infrared," one should not forget that infrared is invisible to the human eye. The early visual devices to record infrared were only able to present black or white: whites in the case of high reflection and blacks resulting from low reflection. For instance, pioneer Robert W. Wood's infrared photographs from the 1910s displayed leaves of trees as white as snow against a completely black sky. In the mid-twentieth century, it became possible to alter these tones into colors by means of certain technical adjustments. Only in the 1960s, color infrared films became available, used for psychedelic and hallucinatory effects in films, album covers, and magazines.[4] In an artist statement, Stig explains that the colors in her NIR-photographs – such as the grey-pink – resulted from random white balance presets; the unnatural colors "chosen" by her modified full spectrum camera would demonstrate the lack of standards and present a "slightly different reality."[5] This means that, depending on the so-called "pass filter" selected (e.g., 720, 850, or 950 nm), the camera creates a preset, but does not detect a specific subject, such as a body or landscape.[6]

Evaluating the historical examples provided by Pierotti and Ronetti, I conclude that almost all the applications mentioned were applied to provide knowledge, either of the infrared region beyond human vision itself or of factual information for scientific or military use. Even psychological results of psychedelic effects may deliver knowledge. In passing, the authors mention an

3 Carolyn L. Kane, Chapter 6, in *Chromatic Algorithms: Synthetic Color, Computer Art, and Aesthetics after Code* (Chicago, Ill: University of Chicago Press, 2014), 1/36.

4 Pierotti and Ronetti, "Beyond Human Vision," unpaged.

5 Stig in exhibition catalog *Martine Stig: Close Encounters* (Barcelona: Marlborough Gallery, 30–11-2023 – 10–02-2024), unpaged.

6 Email correspondence with artist on April 9, 2024.

interesting feature of near infrared rays, already applied in the early twentieth century: to penetrate beyond the surface of skin and tissue – a discovery that was the basis of today's facial recognition systems. The ability of near infrared to penetrate tissue as deep as a few centimeters led some doctors to apply infrared photography for detecting and examining the veins beneath the skin. This in turn provided doctors or surveillance-systems with an opportunity to gain factual knowledge. It is hard to consider Stig's photograph as conveying or representing factual knowledge of the presented body. When we realize that it is a NIR-recording, it becomes even harder to understand what we are looking at: if we are looking beneath the skin indeed, this implies that we do not see the skin color of this body, nor can we identify the color of its hair. The grey-pink color – a random choice by the camera as explained above – does not provide any clues either.

For this kind of photography, the artist and media theorist Elke Reinhuber coined the term "phasmagraphy" in her 2017 article "Phasmagraphy: A Potential Future for Artistic Imaging." She proposes an expansion of the term photography to *phasmagraphy*, a synthesis of the Greek words *phasma* for spectrum and *graphé* for drawing/writing (analogous to photography, as drawing with light). This means that phasmagraphy encompasses a much broader part of the spectrum of electromagnetic wavelengths than human vision in both directions.[7] As a result, this term is too broad for Stig's just-beyond-human-vision photograph *Near, edition#4*, even though the artist used a modified full spectrum camera.

Stig aims at delving into visual realms that are just beyond being visible to the naked eye, but that can be perceived by machines or animals, in order to reimagine possibilities that allow for a gradual blurring of the boundaries between human beings and other beings. This might render us more aware of our natural environment and come closer to it, as an intrinsic part of it, thus extending our conception of reality. An important source of inspiration for her is James Bridle's *Ways of Being: Animals, Plants, Machines: The Search for a Planetary* (2023). Bridle reflects on the concept of the "more-than-human world," coined by the ecologist and philosopher David Abram, referring to a way of thinking

7 Elke Reinhuber, "Phasmagraphy: A Potential Future for Artistic Imaging." *Technoetic Arts: A Journal of Speculative Research*, vol. 15, no 3 (2017), 262.

aimed at overriding our human tendency to separate ourselves from the natural world.[8]

The question arises whether we are able, in one way or another, to imagine not looking through human eyes, but through nonhuman eyes, i.e., eyes of a specific animal or "machine eyes." This query led me to the fascinating in-depth study *Animal Eyes* (2012) by evolutionary biologists Michael F. Land and Dan-Eric Nilsson. Their book compares all known types of eyes in the world of animals. This means that the authors discuss the structure and function of each kind of eye, with a special interest in the natures of optical systems and physical principles involved in image formation. They conclude that there are at least ten distinct ways in which eyes form images.[9] Regarding the visible range of wavelengths, they state that for some animals (including birds, fish, and many arthropods) their spectrum extends toward the short wavelength of the ultraviolet from 400 to about 320 nm. Toward the long wavelength, some fish and butterflies have visual pigments in their eyes with sensitivities of up to 60 nm further into the red than human visual pigments.[10] Stig mentions several examples of animals that use portions of the infrared spectrum for vision: mosquitoes, vampire bats, bed bugs, and some snake and beetle species. A crucial difference with her NIR-photographs is that these animals, just like humans, see a spectrum, whereas Stig's NIR-photograph was shot in a single wavelength. From this perspective, her photographs are more alike machine visions that are "narrow band," using a single wavelength or very small spectrum.[11]

If nonhuman eyes belong to the research field of biologists, photography theorist and practitioner Joanna Zylinska has discussed the concept of nonhuman photography in several studies over the past eight years.[12] She does not consider human and nonhuman elements as opposites because the two merged in the photographic event ever since the inception of photography. She mainly "expands the notion of photography beyond 'things that humans

8 James Bridle, *Ways of Being: Animals, Plants, Machines: The Search for a Planetary* (London: Penguin Books, 2023). Interview by the author with the artist on March 13, 2024.

9 Michael F. Land and Dan-Eric Nilsson, *Animal Eyes*, 2nd edition (Oxford: Oxford University Press, 2012 [2002]), Preface.

10 Ibid., 32.

11 Email correspondence with the artist on April 9, 2024.

12 For instance, Joanna Zylinska, "The Creative Power of Nonhuman Photography," in *Photomediations: A Reader*, eds. Kamila Kuc and Joanna Zylinska (London: Open Humanities Press, 2016), 201–224.

do with cameras' to embrace imaging processes from which the human is absent," such as microphotography and space photography.[13]

She derived the concept from media theorist Richard Grusin's *The Nonhuman Turn* (2015), in which he observed a decentering of the human.[14] Zylinska made this more specific through aiming at positioning the human as just one element in a complex assemblage of perception, in which various forms of organic and technical agents come together for "functional, political, or aesthetic reasons." She even wonders what or who actually "takes" a photograph, and whether the human in fact would be able to do this.[15] Stig's NIR-photographs present a nonhuman vision while still being close to human vision. From this angle, it might come as a surprise that Stig uses the term "post-optic" in reference to her work, a term coined by Kane in *Chromatic Algorithms* (2014). Kane observes a paradigm shift in which an optical and visual epistemology have turned into a post-optic, algorithmic lifeworld. As a result, experience and perception are ever more shaped by "the logic of informatics and data capture systems." Regarding infrared images, Kane argues that even when supported by optical prosthetics, these digital images are exemplary for being fully produced "by and through information technologies – algorithms – not optics and hence they are 'post-optic.'"[16] This would imply that NIR is technically post-optic. However, Stig does not seem to call her NIR-photographs entirely post-optic, as she rather positions them in-between human vision and a post-optic world: "The *post-optic* invites us to expand our parameters of normality and opens doors to the extrasensory. It can contribute to a shared and interconnected reality that fosters interactions between all entities – be they machines, humans or other entities."[17]

Words applied in this quote, such as "invites," "opens doors," "contribute," and "fosters," in fact suggest a stage in-between. Although it is possible to refer to this in-between zone as a "liminal zone," this would suggest that the human is potentially able to transcend thresholds into the domain of nonhuman machines and animals. Because this is not at issue here, I prefer to use "contact zone," in the sense of meeting each other halfway in a dynamic relationship.[18]

13 Joanna Zylinska, *Nonhuman Photography* (Cambridge, MA: MIT Press, 2017), 7.

14 Ibid., 5.

15 Ibid., 130.

16 Kane, *Chromatic Algorithms*, Chapter 6, 34/36.

17 Stig in *Martine Stig: Close Encounters*, unpaged.

18 The concept of "contact zone" was coined by literary scholar Mary Louise Pratt to identify the spaces in which two or more cultures, with competing worldviews and uneven

Stig rightly notes that nonhuman data do not only concern differences between machines and humans. If the prefix "post" suggests that perception through eyes always was optic, Land and Nilsson discuss some intriguing cases of animal eyes of which scientists still do not know whether these eyes produce images or just data. Much is still unclear as well about the viewing angle of animal eyes. Stig's NIR-photographs offer a frontal just-beyond-human-vision photographic view at the world, which is a human perspective. Some animals and machines are able to look as well into different directions at the same time. In the case-study addressed below I briefly consider an instance of spatial just-beyond-human-vision photography, after which I return to Stig's NIR-photograph in order to discuss it as a print.

Contact Zone of Human Eyes and Animal Eyes as Cameras

Land and Nilsson describe the human eye as "a single-chambered camera-like structure with a retina in place of the film, or the CCD array" and a cornea-lens combination that is "not particularly popular in the animal kingdom."[19] In addition, they declare that even though we know that insects have compound eyes with many lenses, biologists still hardly know whether these insects "see" a multitude of images or a single one. They mainly agree about the diversity of eye types, and the distinct ways images are formed. Some of the types are familiar, such as pinholes and lenses. Others are non-customary to us, for instance concave mirrors, arrays of lenses, and corner reflectors.[20] This means that the designs of eyes also vary from camera-type eyes to compound eyes and mirrorlike-eyes. Moreover, there is a difference in number of eyes; ragworms, for instance, have two pairs of eyes, while spiders even have four pairs.[21]

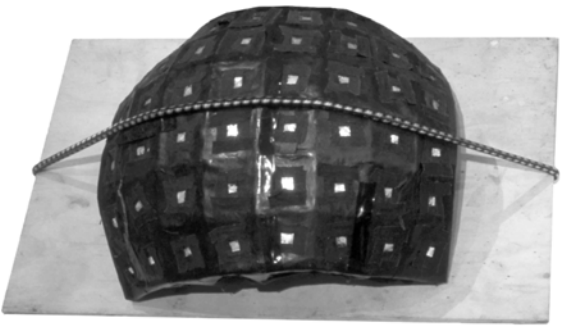
power relationships, meet and interact. See Mary Louise Pratt, "Arts of the Contact Zone," *Profession* (1991), 33–40.

19 Land and Nilsson, *Animal Eyes*, Preface, 119. A CCD (Charge-coupled device) array is positioned behind the lens of a digital camera.

20 Ibid., Preface.

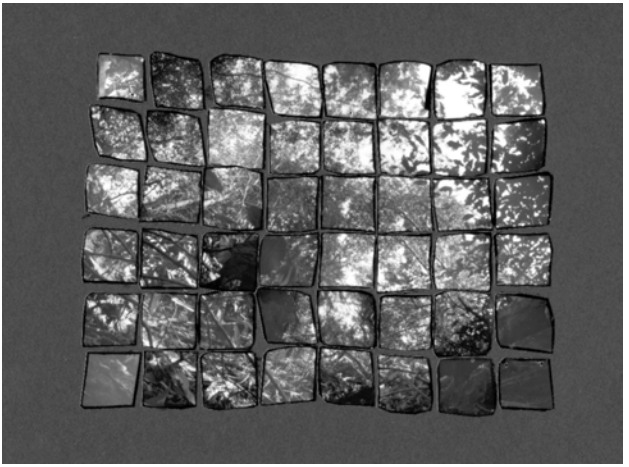
21 Ibid, 1.

12.2 Tuula Närhinen, Flycam, 2002, assemblage of 48 pinhole cameras.



Courtesy of the artist.

12.3 Tuula Närhinen, Flycam, 2002, 48 photographs recorded by pinhole cameras, presented in grid composition.



Courtesy of the artist.

In 1999, the Finnish artist Tuula Närhinen started a photographic project, entitled *The Landscape Seen Through Animal Eyes*, based on a quite similar fascination if from an artistic perspective. She wanted to explore questions like: "what if, instead of the human eye, the camera's structure were to be based on the eye of some other creature? How does the camera affect the photographs produced with it?"[22] Närhinen aimed at constructing visual interfaces in order to find out what the environment looks like through the eyes of, for instance, a fly, bird, or a moose. She tried to reconstruct their eyes by means of various kinds of assemblages of pinhole cameras, called *Animalcams*.[23] This does not mean that the artist believes that humans are able to look through the eyes of animals. She emphasizes that we may collect data, but that we can "never perceive or experience reality exactly as an animal does." What is actually involved here is more like a kind of self-inquiry, including "analysis of the way we understand the world through photographic discourse."[24]

Although Närhinen emphasizes that her artistic research should not be confused with scientific biological research, and that she neither intends exactly to replicate animal vision, the constructions consisting of multiple pinhole cameras encourage spectators to think of "viewing systems" far more complex than human vision. In an interview with curator Susanna Santala, the artist described this intention by saying that she "tried to show that photographs and cameras could look quite different from the ones we are used to."[25] Närhinen's search for how photography constructs our idea of reality, which could also provide insights into other ways of perception, led her to start with looking on the basis of a pinhole camera, being the most basic form of a camera. This kind of photographic seeing is easy to imagine for us, because it is far more simple than human vision. The pinhole camera does not need a lens, because light enters the black box through a tiny pinhole. Next, the artist studied structures of eyes of animals and made construction drawings of assemblages of multiple pinhole cameras. For instance, the *Flycam* – measuring 30 x 25 x 17 cm., and consisting of 48 pinhole cameras – is a kind of "compound

22 Tuula Närhinen, "Imag(in)ing the Non-Human Condition," in *Altern Ecologies: Emergent Perspectives on the Ecological Threshold at the 55th Venice Biennale*, eds. T. Elfving and T. Haapoja (Helsinki: Frame Contemporary Art Finland, 2016), 111.

23 Https://www.tuulanarhinen.net (accessed March 25, 2024).

24 Närhinen, "Imag(in)ing the Non-Human Condition," 120, 109.

25 Susanna Santala, "Documenting the Invisible and the Vanishing," *Frame News*, 1 (2003), 32.

eye," as identified by Land and Nilsson (Fig. 12.2). Through installing the *Animalcams* in the natural habitat of particular animals, the recordings in the pinhole cameras offer us initial access to a contact zone with animal vision. In addition to this zone of mediation, Närhinen included several photographs she took of herself with her standard camera as a way to show her awareness of the voyeuristic character of her desire to observe the habitat of animals.

Närhinen's project calls forth the title of Joanna Zylinska's recent book *The Perception Machine* (2023). Zylinska focuses here on imaging "after photography," not in the sense of overcoming, but rather as a mediation "modelled after photography" in order to emphasize that what "has come after" can still be called photography.[26] This also means that Zylinska defines the "perception machine" much broader than only the physical camera. Using perception as a lens, she examines the ontology of the photographic event rather than that of the photographic object.[27]

The *Animalcams* project was not limited to recording photographic events, however. Närhinen also chose to exhibit the recordings as grids of physical prints. And so did Stig in her NIR-project.

Problematized Embodied Perception of Printed JBHV Photographs

Some of the NIR-photographs were printed by Stig in various sizes. *Near, edition#4* (Fig. 12.1) materialized into a physical object in A5 format (14.8 x 21 cm). This just-beyond-human-vision photograph in fact looks quite similar to a familiar analog photograph. However, it has not lost its exceptional "just-beyond-human-vision" character in printed form. This is the case in particular because this NIR-photograph shows body parts: holding the print in my hands becomes a "just-beyond-human" experience. If Zylinska tends to focus in her studies increasingly on big issues such as debates on climate change, extinction, and the Anthropocene, Stig's *Near, edition#4* limits our attention to what literally is closest to us: our body.[28] The strange embodied perception of touching this photograph can best be explained on the basis of studies by

26 Joanna Zylinska, *The Perception Machine: Our Photographic Future between the Eye and AI* (Cambridge, MA: MIT Press, 2023), 2–4, 6.

27 Ibid., 65.

28 Zylinska, *Nonhuman Photography*, 15. In many other NIR-photographs, Stig presents close-ups of landscapes, though does not explicitly address these big issues.

visual anthropologist Elizabeth Edwards on the relationship between materiality of photographs and affect. She emphasizes that photographs, partly due to their small size and everyday use,

> are made to mean in relation to social actions across a range of sensory experience … These arguments insist on the sense of the relationship between the body and photographic images, how users position themselves in relation to photographic images and perform a sense of appropriateness through relationships with the photographic image … Photographs are seldom talked about without being touched, stroked, kissed, clasped, and integrated into a range of gestures.[29]

Touching Stig's printed photograph feels strange. I cannot imagine negating the surface of the picture in order to look and feel "through" the medium and to experience the "real" world/body, discussed as an act of "immediacy" by media theorists Jay David Bolter and Richard Grusin.[30] As a consequence, the NIR-photograph does not appear to invite us to touch or caress it.

How does our perception change when the printed images are presented in an exhibition? From December 2023 until February 2024, Stig presented grids of printed NIR-photographs on the walls of the Marlborough Gallery in Barcelona in her solo-exhibition *Close Encounters*. Among close-up recordings of landscapes, close-ups of human bodies were included. Glancing over the images, given that touching them was not allowed, evokes complex associations with film theorist Laura U. Marks's study of "haptic visuality." Marks calls images haptic when they evoke a strong sense of touch, and invite the viewer to glance over the surface of the film screen.[31] In particular close-ups of human skin would be experienced by us as if we are touching the surface of the skin with the eyes, rather than looking into depth or literally touching them with our fingers. Quite differently, the NIR-photographs of body parts do not invite our eyes into an embodied experience of touching the surface of skin, yet neither do they invite a disembodied perception.

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29 Elizabeth Edwards, "Objects of Affect: Photography Beyond the Image," *Annual Review of Anthropology*, vol. 41 (2012), 228–229.

30 Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999).

31 Laura U. Marks, *The Skin of the Film: Intercultural Cinema, Embodiment, and the Senses* (Durham/London: Duke University Press, 2003 [2000]), 162–163.

How, then, can we describe this viewing experience? Kane warns us to treat IR-images as if they are optical images, because fundamental reductions and translations have occurred. Rather than a direct indexical relationship, what is actually registered, according to Kane, is "a set of changes *between* states, a drama occurring within the system's elements and not the empirical or physical entity it simulates."[32] But in what terms can we characterize our viewing experience of IR- and NIR-images? Reinhuber rightly suggests at the end of her essay that "phasmagraphic" images need a new vocabulary "to create, decipher, and interpret these images." She does not provide a new vocabulary herself but instead expresses the hope that future generations will develop criteria to investigate "the hidden qualities of yet-unseen phenomena."[33] I suggest to describe *Near, edition#4* as a virtual photograph, in the sense of a non-customary, never-lived experience in human vision, while meeting a mode of nonhuman vision halfway in a contact zone.

What about the complexity of visualizing and presenting the photographs taken by the multiple pinhole *Flycam* in a grid composition (Fig. 12.3)? It is impossible to perceive this grid as a photograph taken by a fly. Rather than applying photography to make the fly's vision visible, its vision is brought into a certain kind of existence and to the spectator's awareness. As the artist emphasizes, the project "reminds us that the world of perception is not as unproblematically and self-evidently present to us as everyday experience would perhaps suggest."[34] More specifically, in the case of looking at the images taken by the *Flycam*, and different from when perceiving familiar photographs, it is hard to imagine looking into the distance. On the contrary: one is looking "into" the 48 parts of the fly's virtual eye, as a kind of reverse perspective.[35] Or, to complicate the issue even further: compound eyes use multiple optical systems, but do not necessarily form multiple images. Even if each of the lenses in an insect's eye

32 Kane, *Chromatic Algorithms*, Chapter 6, 19/36 (emphasis in original).

33 Reinhuber, "Phasmagraphy," 271–272.

34 Tuula Närhinen, *Visual Science and Natural Art: A Study on the Pictorial Agency of Natural Phenomena*, Doctoral Thesis in Fine Arts (Helsinki: University of the Arts, 2016), 366.

35 Highly interesting theoretical and artistic projects from new and uncommon spatial perspectives are created by artists, critics and scholars of the practice and research-based art foundation Radical Reversibility. Stig is co-founder of this foundation. https://radicalreversibility.org.

forms a tiny image, this is not what the insect actually sees.[36] As spectator, I become aware that I fail visually to understand what I am looking at.

In 2019, Kane shifted her interest from chromatic algorithms to the phenomenon of failures in *High-Tech Trash: Glitch, Noise, and Aesthetic Failure*. She opens her book with this greeting: "Welcome to the Failure Age." On the one hand, she addresses literal failures by observing that eighty to ninety percent of all innovation projects fail, and that nobody talks about them. On the other hand, she approaches failures from a more philosophical perspective, by intending to transcend personal failures in order to consider them as meaningful metaphors for broader human struggles. The positive spin of her argument is that through "working *with* our failures and shortcomings, and facing them head-on, we can grow in new and intellectually humble ways."[37] Stig's and Närhinen's aims are in line with this view, but seem to come even closer to Zylinska's prophecy: "Embracing nonhuman vision as both a concept and a mode of being in the world will allow humans to see beyond the humanist limitations of their current philosophies and worldviews, to unsee themselves in their godlike positioning of both everywhere and nowhere, and to become reanchored and reattached again."[38]

Conclusion

As I argued above, the NIR-photograph *Near, edition#4* produced by Martine Stig and *Animalcams* built by Tuula Närhinen encourage us to realize that if particular animals and machines would be able to inform us how *they* "see" the world, we would not talk about *the* visible world anymore, but about the limited part we are able to perceive. Although it is often assumed that all our visual tools have increased the superiority of our human vision in relation to our environment, I showed that studies of nonhuman vision by both scholars and artists have made us more aware of the limitations and deficiencies of human vision. The "just-beyond-human-vision photographs" created by means

36 Land and Nilsson, *Animal Eyes*, 157. The compound (superposition) eyes of nocturnal insects and deep-water crustaceans would operate in concert to form a single deep-lying image.

37 Carolyn L. Kane, *High-Tech Trash: Glitch, Noise, and Aesthetic Failure* (Oakland, CA: University of California Press, 2019), 2–3 (emphasis in original).

38 Zylinska, *Nonhuman Photography*, 15.

of NIR and *Animalcams* demonstrate that we cannot imagine a viewing experience of our own when looking at these virtual photographs, because these photographs rather actualize – bring into existence – than visualize a world just beyond our visual limitations. Stig's and Närhinen's projects do not let us enter nonhuman visions. They rather invite us into a contact zone, where virtual photography enables a first step toward meeting nonhumans halfway. The aims of their projects come close to what Zylinska described as a desirable effect to us, human beings: "to unsee" ourselves in our "godlike positioning."