YVONNE VOLKART

# TECHNOLOGIES OF CARE

## FROM SENSING TECHNOLOGIES TO AN AESTHETICS OF ATTENTION IN A MORE-THAN-HUMAN WORLD

DIAPHANES

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TRANSLATED FROM THE GERMAN
BY PETER BURLEIGH

**DIAPHANES**

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# BEING TROUBLED: AN INTRODUCTION

> The problem is not that you do not know that our forests are burning and our peoples are dying. The problem is that you have become accustomed to this knowledge.[1]

The point of departure for this monograph is the research project *Ecodata-Ecomedia-Ecoaesthetics. The Role and Significance of New Media, Technologies and Technoscientific Methods in the Arts for the Perception and Awareness of the Ecological,* which our team conducted from 2017–2021. Using the example of a 10,000-year-old pine forest in southern Switzerland that has been severely damaged by climate heating, we explored the interplay between art and natural science, asking how art can use digital technologies and data to raise sensibility to ecological relationships in a more-than-human world, and what distinguishes them from other techniques of observing and accessing "nature." The relevant questions were: How and by what means can art bear witness to anthropogenically produced ecocide? What role do technologies and scientific data, reports and methods play? And how can art and its technologies affect us toward a planetary co-living and promote moments of attention and care for the cross-species multiplicity of the Earth's inhabitants? Central to the overall project was the collaboration with the Swiss Federal Institute for Forest, Snow and Landscape Research WSL and their experi-

ments with the "Pfynwald," an alpine outdoor laboratory where research on the effect of climate heating on the forest is conducted.[2]

The research project was initially conceived as an updating and deepening of the exhibition and book project *Ecomedia. Ecological Strategies in Today's Art,* which Sabine Himmelsbach, Karin Ohlenschläger and I curated in 2007–2009.[3] At that time, we were also interested in how artists use media and technologies to explore and articulate ecological contexts. We called these ecomedia: hybrid couplings between "nature" and technology, and practices of translation that make sensor-based environmental data perceptible to humans (e.g., sonifying weather data).[4] Ecomedia and the ecodata they collect are not only explicitly involved in the production of knowledge about "nature," but also—stylized as apparatuses for raising awareness, as mediators between worlds—have become outright beacons of hope for sociopolitical change. This broad euphoria towards advanced technical means for ecologization also made me skeptical, despite my enthusiasm for media-ecological experimentation. What good are the technical means if they do not correlate with a practice of mindfulness and care? And how to get into such a practice? That the machinic logic and capitalist infrastructure of ecomedia can quickly over-code "good" intention, dispel immersion in and relation with the forces of "nature" and subsume

1   Kay Sara, Milo Rau, "'Against Integration': Dieser Wahnsinn muss aufhören," *Der Standard*, May 16, 2020, https://www.der-standard.de/story/2000117523875/against-integration-dieser-wahnsinn-muss-aufhoeren (accessed March 11, 2022).

2   The research project *Ecodata-Ecomedia-Ecoaesthetics* (2017–2021) was realized by Yvonne Volkart (Principal Investigator), Marcus Maeder, Rasa Smite and Aline Veillat, in collaboration with Arthur Gessler, Christian Ginzler, Andreas Rigling, the Swiss Federal Institute for Forest, Snow and Landscape Research WSL, and Kaisa Rissanen, WSL and University of Helsinki. It was funded by the Swiss National Science Foundation and hosted by the Academy of Art and Design Basel FHNW, https://www.fhnw.ch/de/forschung-und-dienstleistungen/gestaltung-kunst/forschung/forschungsprojekte-des-instituts-kunst-gender-natur-iagn/ecodata-ecomedia-ecoaesthetics (accessed March 5, 2023).

3   Sabine Himmelsbach and Yvonne Volkart, eds., *Ecomedia. Ecological Practices in Today's Art* (Ostfildern: Hatje Cantz, 2007). In 2018–2019, Sabine Himmelsbach, Karin Ohlenschläger and I again curated a joint exhibition in Basel and Gijon on the topic, where we wanted to investigate what had changed in the intervening decade, just as with the ongoing SNSF research project. *Eco-Visionaries. Art, New Media and Ecology After the Anthropocene* was the title of the exhibition series, now in semi-autonomous association with other institutions in Lisbon (MAAT), Umea (Bildmuseet) and London (Royal Academy of Arts). https://www.hek.ch/en/program/exhibitions/eco-visionaries (accessed March 21, 2022). See Pedro Gadanho, ed., *Eco-Visionaries. Art, Architecture and New Media After the Anthropocene,* exhib. cat. (Berlin: Hatje Cantz, 2018).

4   We adopted this term from Sean Cubitt, *EcoMedia* (Amsterdam and New York: rodopi, 2005), and Andrea Polli, https://www.andreapolli.com (accessed March 21, 2022).

these into its own machinic logic is undeniable, but readily suppressed in light of the manifold hopes invested in its possibilities. At the same time, media-induced disruptions, lapses, and dispersions are interesting from an aesthetic perspective—after all, they show that "nature" can only ever be perceived and mediated by means of certain technologies—eyes, ears, sensors, algorithms, drawing, photography, etc.—that "nature" is *natureculture,* and that media-aesthetic perceptions create alienations and surpluses that are affective.

The fact is, with digitalization and the associated mobility of the last 30 years, the centuries-old process of exploitation of the Earth has experienced an unimagined increase. The entire planet and its human and non-human inhabitants have become resources that can be consumed, depleted and turned into waste. This also includes the data processing of matter. At the same time, these processes of consumption appear tied to the promise of prosperity, making it so difficult to detach from them. A critical question is then how to deal with this, with these contradictions of our life in the Wasteocene, our age of wasting the world.[5] How and by what means to continue, to seek to change the conditions—despite everything? That is the question behind this project. Our great task today is to develop strategies that first make the dimensions of this deadly circle perceptible, second oppose it, and third make possibilities of life based on other values, values of relationality and care, sensorially and aesthetically graspable. All practices—artistic, media-cultural, spiritual, activist, communal, reproductive, pedagogical—that try to break out of this economy of devaluation with playful aesthetic means, that pay attention to all of the Earth's inhabitants and open us to transformations beyond simple promises of wholeness, I understand as caring practices: they produce and reproduce life. Caring is enacting practice, desiring sensing, and responding across species. This is why I prefer the verb form *caring* to the noun *care*. It has a *transitive* direction, going toward the other, perhaps toward the other of the self. The relational *to care* is open to alterity, to the strangeness of the world.

In this publication, I would like to discuss how technologies become technologies of caring in a more-than-human world, using selected artistic projects as examples: they thwart the dominant culture of exploitation, work through hierarchized dependencies, and seek other connections and patterns. What does it mean to come into an ecological co-being, a caring with beings that are radically different? What role can technologies and scientific data play in this? As I attempt to show, moments of caring are not so much enabled by the use of innovative (sensing) technologies[6] as by techniques of sensing, by aesthetic-media practices of alienation and *transmaking*. I coin this term with regard to practices of *translating*, whose etymology goes back to the Latin *trans* (over, across). By transmaking I mean a fundamental disposition toward transitions and the allowing of alterity that is opposed to *othering.* As in the time of the first *Ecomedia* project, today connections to the manifold of the world, to its data as well as to its translations still play a role. But more than then, the intensities, surpluses, and shared ecologies that occur through media-aesthetic transpositions come into view, as do queerfeminist, decolonial concerns. I have called these strategies techno-eco-feminist.[7] By this I mean that in the wake of the intensification of the technological, and the losses and threats posed by climate heating, the concerns of previously separate techno- and eco-feminist currents are combining in novel ways; and that as struggles over climate justice and questions about planetary coexistence enter dominant discourses of theory and art, feminist approaches have begun to leave their ghettos and become central references.

5   Following the many -cenes, we coined this term in our SNSF research project *Times of Waste* (2015–2018). (Flavia Caviezel, Mirjam Bürgin, Anselm Caminada, Adrian Demleitner, Marion Mertens, Yvonne Volkart, Sonia Malpeso), https://www.objektbiografie.times-of-waste.ch/en/. At the same time, environmental historian Marco Armiero introduced the term into the discourse. See Marco Armiero, "Fumogeni #2," *Chanarte,* February 28, 2018, https://www.chanarte.com/2020/07/29/fumogeni-2-%e2%80%a8-marco-armiero/ (both accessed April 3, 2023).

6   Birgit Schneider and Evi Zemanek translate *sensing technologies* into German as *Spürtechniken.* It has a combined sense meaning *techniques of sensing/feeling.* Birgit Schneider and Evi Zemanek, eds., "Introduction," *Spürtechniken: Von der Wahrnehmung der Natur zur Natur als Medium,* Media Observations Special Issue (April 30, 2020), https://www.medienobservationen.de/ (accessed March 5, 2023).

7   Yvonne Volkart, "Techno-Ecofeminism: Nonhuman Sensations in Technoplanetary Layers," in *The Beautiful Warriors: Technofeminist Practices in the 21st Century,* ed. Cornelia Sollfrank (Colchester, New York and Port Watson: Minor Compositions, 2020), pp. 111–135; Cornelia Sollfrank, "Preface," in ibid., pp. 1–17: https://www.minorcompositions.info/wp-content/uploads/2019/10/BeautifulWarriors-web.pdf (accessed March 5, 2023). First published in German as Cornelia Sollfrank, ed., *Die schönen Kriegerinnen. Technofeministische Praxis im 21. Jahrhundert* (Vienna: transversal texts, 2018).

## BECOMING ENVIRONMENT, BECOMING-ANTENNA

In the art of the last 15 years, then, a relational, cross-species turn has taken place—a techno-eco-feminist turn toward the environmental, toward ontologies of becoming-together and caring for the Earth. It is a new sensibility toward planet Earth's grounding on physical forces like atmospheric and oceanic flows, in the middle of the total technologization of the world. Technologies are everywhere, but "nature" is everywhere, too. "Gaia intrudes," Isabelle Stengers says, to name the generative, physical and cosmic[8] forces mobilized by the capitalist exploitation of the Earth and leading to the Wasteocene: Gaia is a "ticklish being" that not only backfires when she is offended, but is also "blind to the damages she causes, in the manner of everything that intrudes."[9] Countering the dominant perception of climate change as something "distant and abstracted," Astrida Neimanis and her colleagues propose "our relationship to climate change as one of 'weathering'."[10] These new perceptions of the onto-power of the material world and humans' entanglement in that world specify and amend the dominant discourse of the Anthropocene: of man as the driving factor of planet Earth. They open up to what I called "environmental becoming."[11]

This relational turn is carried by an emotional refrain that sees itself as deeply political: "My tear is political! It is a sign that the current structure no longer works, that we as individuals cannot solve anything."[12] This statement from a young climate activist exemplifies the micropolitical mood today, which mobilizes groups of like-minded people by affixing a planetary sense of community.[13] By means of aesthetic actions, such as sticking themselves to the ground, they create unrest and concern. In connection with this, problematized concepts such as empathy or kindness experience a revaluation and politicization. In particular, there is an attempt to develop strategies of solidarity and cooperation with beings that are ignored or fought against in the dominant culture, such as pigeons, weeds, insects, mosses, mycelia or bacteria. The better world that is sought to be created is neither a world full of technically upgraded superhumans nor one without humans. Rather, alliances of "conspiring"[14] and "togethering"[15] are conceived, which include humans in their creatureliness and their participation in the planetary, in their "non-human ontology." These are forms and practices of collective subjectivizations to bring about, if we follow Félix Guattari, social, mental and ecological changes in capitalism.[16] Guattari calls such practices "ethico-aesthetic." By this he means that forces to change what exists are mobilized through affects that can be triggered by micropolitical, sensory aesthetic practices.[17] Ethical-aesthetic practices are not necessarily artistic ones, even though I focus on such in the present framework.

As mentioned, alliances with machines are also being sought at the same time. Sensor technologies in particular are supposed to help make the non-human modes of existence perceptible—in the hope that they will be used to uncover ignored environmental phenomena and crimes as well as generate concern for the "environ-

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8    By "cosmic" I refer to the physical forces associated with the universe. But I also use the term to blur the split between physics and myth.

9    In Isabelle Stengers' adaptation, "Gaia" is neither Earth "in the concrete" nor the connective cybernetic organism of Deep Ecology; rather it is an ontic force, beyond humanity, beyond all the various species inhabiting Earth. Isabelle Stengers, *In Catastrophic Times. Resisting the Coming Barbarism* (Lüneburg: Open Humanities Press in collaboration with Meson, 2015), p. 43.

10   WEATHERING. a collaborative research project: http://weatheringstation.net/about/ (accessed October 26, 2021).

11   Yvonne Volkart, "Flowing, Flooding, Fibbing: From Fluid Subjects to Environmental Becoming," in *Liquidity, Flows, Circulation: The Cultural Logic of Environmentalization*, ed. Matthias Denecke, Holger Kuhn and Milan Stürmer (Berlin and Zurich: diaphanes, 2022), pp. 221–240.

12   Quoted in Tobi Müller, "Das Sekret des Theaters sucht den Weg ans Licht," *WoZ Die Wochenzeitung*, October 7, 2021, p. 21.

13   In a similar way, and despite the danger of homogenization, I also use the "we" in this text. I want to indicate with it my own (changing) involvements and to name effects which have planetary dimensions because of global hierarchies. They affect, even if differently, all Earth-dwellers.

14   Natasha Myers, "How to grow livable worlds: Ten not-so-easy steps," extended lecture version, 2021 [2018], https://www.abc.net.au/religion/natasha-myers-how-to-grow-liveable-worlds:-ten-not-so-easy-step/11906548 (accessed February 24, 2023).

15   Tim Ingold, *Anthropology and/as Education* (London: Routledge, 2017), p. 26.

16   Félix Guattari, *The Three Ecologies* (London and New Brunswick, NJ: The Athlone Press, 2000).

17   Félix Guattari, "Remaking Social Practices," in Pierre-Félix Guattari, *The Guattari Reader,* ed. Gary Genosko (Oxford and Cambridge, Mass.: Blackwell Publishers, 1996), pp. 262–271. https://monoskop.org/images/4/4b/Genosko_Gary_ed_The_Guattari_Reader.pdf (accessed March 5, 2023); Félix Guattari, *Chaosmosis: an ethico-aesthetic paradigm* (Bloomington and Indianapolis: Indiana University Press, 1995). For a nuanced development of the term, see Matthew Fuller and Olga Goriunova, *Bleak Joys: Aesthetics of Ecology and Impossibility* (Minneapolis and London: University of Minnesota Press, 2019).

ment"—as an effect of technologically enabled contact with others. This new acceptance of and hope invested in technology as a means of ecological sensitization is due on the one hand to general technologization, and on the other hand to a techno-political, media activist tendency to appropriate and recode the normalized means. It springs from the insight of "our" complicit dependence on infrastructures of exploitation that are ideologically abhorred yet have a pragmatic necessity. At the same time, one does not want to be paralyzed by these contradictions: in a world where technologies machinate us and chain us to the consequences of climate heating, there is neither a life beyond technology nor a return to a pristine untouched nature. Thus, all kinds of technological devices, such as cell phones, thermal imaging cameras, lidar scanners, drones, GoPros, as well as technologies based on Big Data, such as Neural Networks, AI or Blockchain, tend to be positively received even in activist communities. The priorities in media and eco-activism still diverge—while blockchain technology is celebrated quite euphorically as a means for virtual participation and democratic communication in communities with an affinity for the arts (despite criticism from within their own ranks, who see no added value in it), eco-activists criticize its disproportionate waste of resources.

As I would like to show in contrast, the technical means play an essential role for technologies of care, but not only in their instrumental function of enabling perception; rather in their affective, sensory, aesthetic, and phantasmatic possibilities: it is the artistic setting with its specific way of *making-become*, hence aesthetics, that creates attention and concern for the more-than-human world.[18] It is the functioning of the aesthetic that connects sensuality with passion and knowledge, and not technology that creates affective forms of knowledge and cognition. Strengthening the power of imagination (with or without new technologies) is central to this, be-

cause imagination is needed to be able to perceive even that which eludes the sensual. And much in the world eludes even the most innovative technological senses.[19]

Therefore, I claim that the transversal,[20] consequently the critique of power and the political potential of techno-eco-artistic projects, is to be sought less in the use of innovative technologies and well-intentioned themes than in a radical affectation/affirmation of our relationality and the enabling of aesthetic experiences of co-existence with our co-beings. It lies in the celebration of a surplus that, without denying the catastrophic, activates the aliveness of co-being. Such movement from technique to the aesthetics of care and attention is formulated in the subtitle of this monograph.

Sensors are feelers that scan and measure the environment; originating from both the natural and the technical world, they are receptive and active. They translate physical or chemical processes into electrical signals and make them rationally tangible in the form of numerical information.[21,22] The ecological data obtained with sensors are based on measurability and verifiability, they suggest accuracy and truthfulness; that is why their collection is also very popular in *citizen-sciences*. The associated accumulation of data and its interpretation does not necessarily lead to certainty, however. Jean-Luc Nancy has pointed out that technical results become means to trigger new purposes, new search processes[23]—a complexity factor of techno-scientific activity that plays into the hands of climate change deniers and their desire for complexity reduction. As Nicole Seymour mentions, too much information and knowledge can even have a paralyzing effect.[24] That the hope for facticity associated with sensing technologies as a basis for sociopolitical change engenders a dilemma is also made clear by the opening quote from indigenous actress Kay Sara: The real problem is not that we know too little. Rather, the problem is that we "have gotten used to this

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[18] By aesthetics (*aisthesis*) I understand not only its fundamental meaning as the gaining of knowledge and cognition through sensory perception, but also the way something is (artistically) made, has a sensory effect and thus subjectivizes.

[19] See Kathryn Yusoff, "Insensible Worlds: postrelational ethics, indeterminacy and the (k)nots of relating," *Environmental and Planning D: Society and Space*, vol. 31 (2013), pp. 208–226.

[20] Roberto Nigro and Gerald Raunig on Guattari's "transversality," in *Inventionen 1*, ed. by Isabell Lorey, Roberto Nigro, and Gerald Raunig, Zurich: diaphanes 2011, pp. 194–196.

[21] "Sensing technology, simply put, is a technology that uses sensors to acquire information by detecting the physical, chemical, or biological property quantities and convert them into readable signal." https://www.yokogawa.com/special/sensing-technology/definition/ (accessed March 5, 2023).

[22] On the ubiquity of sensor technologies, see Chris Salter, *Sensing Machines: How Sensors Shape Our Everyday Life* (Cambridge, Mass.: MIT Press, 2022); Jennifer Gabrys, *Program Earth: Environmental Sensing Technology and the Making of a Computational Planet* (Minneapolis and London: The University of Minnesota Press, 2016).

[23] Jean-Luc Nancy, "Of Struction," *Parrhesia*, no. 17 (2013), pp. 1–10, here p. 3.

[24] Nicole Seymour, *Bad Environmentalism* (Minneapolis: University of Minnesota Press, 2018), p. 2.

knowledge."[25] My colleague Johannes Bruder sums up this attitude thus: "I know, but I don't care."[26]

It no longer needs information and knowledge, but touch: aesthetic practices that turn the technical-sensorial observing/measuring/data processing of *sensing technologies* into a *technology of sensing*, a participation (willingness) without distance. *Sensing* goes back to the Old French *sens, sen, san* ("sense, reason, direction"), Latin *sensus* ("sense", "direction") and the Proto-Indo-Germanic word *sent* ("feel").[27] The German *spüren* ("to sense"/"to feel") means etymologically first of all to *follow a track*.[28] A *Technology of Sensing* would thus be a sensing, a sense and direction pursuing action: it is sense-ability, a technical as well as non-technical method of measuring. "Measurement is a form of touching," writes Karen Barad.[29] And touching means, as she argues on the basis of subatomic particles touching themselves: to embrace something/self in its otherness. From such an unfamiliar particle perspective, *sensing technologies* are always potentially *sensories* for *feeling alterity*—but to fulfill them, strategies are needed that, like Barad's, invert, reinterpret and alienate the familiar and purely instrumental.

The strength of sensor-based art, activism, or citizen-science projects thus lies, often contrary to their own claims, not in the facticity or scientific relevance of the collected data (which they do not provide), but in the participation and witnessing[30] of what is going on, thus in their affective and affecting relevance: they create restlessness and desire for wanting to know more precisely, to demand answers—Why do we have very different numbers than those we are given about the toxicity of the earth around Fukushima or the extent of deforestation in the rainforest? In addition, sharing and reusing the data, as well as the associated realization of one's own (image and audio) realities, engages people and provides a sense of participation in a common cause:

[Satellites] are to ecological activism what cellphone cameras are to #BlackLivesMatter… When the cool, abstract data of the environmental sciences are adopted and expressed by impassioned individuals and groups, you get the Climate Justice Movement. Spanning the globe with its powerful proxies, the climate movement turns data into knowledge, then it turns knowledge into aesthetic forms, and finally it turns aesthetic forms into action.[31]

However, the processes of translation between technologies, art, and activism do not run as seamlessly as Brian Holmes' argument suggests. Already Félix Guattari, who was open to electronic communication media such as radio as means for a "post-medial era," points out that "future forms of subjectivation"[32] have to be elaborated just as much. In one of his last texts, he adds: "Obviously, we cannot expect a miracle from these technologies: it will all depend, ultimately, on the capacity of groups of people to take hold of them, and apply them to appropriate ends."[33] The crux of the matter is not only to get into an eco-political action at all, but also into one that has a sustainable and broad impact. Obviously, this requires a variety of means, such as "future forms of subjectivity," data, technologies, "aesthetic forms," etc. Yes, technology can, must be included in ecological action. But only if it puts us in constant disquiet and is not seen as the ultimate cure.

Technologies of caring, then, as the title suggests, are not so much sensor technologies as aesthetics that invite us to pay attention to the more-than-human world because attention, according to Tim Ingold, is one of the most fundamental acts of engaging with the world: "'Attention' comes from 'ad-tendere,' literally meaning to stretch (*tendere*) toward (*ad*)."[34] Being attentive, in this definition, is an action that moves the act of perceiving from the head to the body and from the body to the en-

25   Sara and Rau, "Against Integration."

26   Johannes Bruder, on the occasion of the conference *Situated in the Global: Conflicts, Costs, Atmospheres*, Kunstuniversität Linz, IFK, October 12–19, 2022.

27   https://en.wiktionary.org/wiki/sense (accessed February 25, 2022).

28   In German, the word *spüren* means "to trace." Grimm's dictionary, quoted in Schneider and Zemanek, *Spürtechniken*, n.p.

29   Karen Barad, "On Touching—The Inhuman That Therefore I Am (v1.1)," in *Power of Material / Politics of Materiality*, ed. Susanne Witzgall and Kerstin Stakemeier (Zurich and Berlin: Diaphanes, 2014/2017).

30   Jonathan Gray calls this function "data witnessing." Jonathan Gray, "The Datafication of Forests? From the Wood Wide Web to the Internet of Trees," in *Critical Zones: The Science and Politics of Landing on Earth*, exhib. cat., ed. Bruno Latour and Peter Weibel (Cambridge, Mass.: MIT Press, 2020), pp. 362–369, here p. 368.

31   Brian Holmes, "Empathy Machines: Emergent Organs for an Eco-Body?," in *Springerin* 4 (2017), https://www.springerin.at/en/2017/4/empathiemaschinen/ (accessed March 5, 2023).

32   Guattari quoted in Matthew Fuller, *Media Ecologies: Materialist Energies in Art and Technoculture* (Cambridge, Mass.: MIT Press, 2005), p. 5.

33   Guattari, "Remaking Social Practices," p. 263.

34   Ingold, *Anthropology*, p. 21.

vironment. It turns the body into a machine, a sensor, and gives it a direction (toward the other). As a responsive act, it is, according to Ingold, less intentional and "cognitive" than "ecological,"[35] that is, relationally interconnected with many.[36]

Similarly, Anna Krzywoszynska and Sam Outhwaite speak of the need to develop "apparatuses for cultivating the art of paying attention to Gaia" in relation to agriculture: "Gaian apparatuses"—farming techniques of immersive observation—have to be learned and practiced, because attention (in their case to the soil) is not automatic, even with the latest equipment:

> The Gaian response demands more than a democratization of science through public participation or citizen science efforts. ... In Gaian apparatuses, local knowledge actors need not only to be included, but to be furnished with a capacity to pay attention to the material world in ways which would lead to a composing with it.[37]

As with the artistic-media activist practices, the peasant Gaian apparatuses are also practices of listening and doing. They are ethical-aesthetic practices that go beyond mere technical and sensory perception and have implications for how one leads a life. And as with Gaian apparatuses, technologies of care is about technologies of sensing, an aesthetic of becoming attentive to and participating in alterity. Becoming environment. Becoming sensing. Natasha Myers speaks of "Becoming Sensor,"[38] Anna Lowenhaupt Tsing of "Arts of Noticing,"[39] Donna Haraway invents beings with feelers,[40] Chus Martínez thinks "receivership."[41] It's becoming-antenna: with a large parabolic antenna and her future organs, the protagonist in Ursula Biemann's video tableau *Acoustic Ocean* receives the sound of the world (fig. 1). Being an artist would then mean being a medium[42] for sensing the materiality of the Earth. And making a techno-eco-logical-aesthetic event out of it.

I use the term "technology" in a broad sense. First, I mean "technology" in an instrumental and cultural-technical sense, then "technology" as the "becoming technological of technology" that goes beyond the purely technical.[43,44] However, I also then borrow substantially from Michel Foucault's technologies of the self and from Teresa de Lauretis's technologies of gender, thought further for the constitution of gender.[45] Here, Foucault means bodily technologies, such as self-care, "by which the individual constitutes and recognizes himself *qua* subject."[46] De Lauretis connects such a body- and gender-technological approach to the subject-constituting power of the imagination, which can be aesthetically articulated in the arts. Technologies, and the fantasies associated with them, interpellate, invoke us as subjects, and are therefore political.[47]

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[35] Ibid, p. 26.

[36] A contemporary definition of ecology is given by Erich Hörl: "Ecology has started to designate the collaboration of a multiplicity of human and nonhuman agents: it is something like the cipher of a new thinking of togetherness and of great cooperation of entities and forces, which has begun to be significant for contemporary thought; hence it forces and drives a radically relational onto-epistemological renewal." Erich Hörl, "Introduction to general ecology: the ecologization of thinking," in *General Ecology: The New Ecological Paradigm*, ed. Erich Hörl and James Burton (London and Oxford: Bloomsbury, 2017), p. 3.

[37] Anna Krzywoszynska and Sam Outhwaite, "Unsettling Soils: Soil Microbiome, Farmer Knowledge Anxieties, and the Search for a Gaian Agriculture," unpublished paper given at the workshop *Techniques Matter* as part of the research project *Ecodata–Ecomedia–Ecoaesthetics* (2017–2020), Academy of Art and Design Basel FHNW, May 7, 2020.

[38] Natasha Myers, *Becoming Sensor in Sentient Worlds*, https://becomingsensor.com (accessed March 10, 2023).

[39] Anna Lowenhaupt Tsing, *The Mushroom at the End of the World* (Princeton and Oxford: Princeton University Press, 2015), pp. 17–25.

[40] Donna Haraway, "The Camille Stories: Children of Compost," in *Staying with the Trouble: Making Kin in the Chthulucene* (Durham, NC: Duke University Press, 2016), pp. 134–168.

[41] Chus Martínez and Quinn Latimer, Mastersymposium "Ages of Receivership. On Generous Listening," Institute Art Gender Nature, Academy of Art and Design Basel FHNW, spring 2022, https://dertank.ch/we-explore/podcast-promise-no-promises/ (accessed March 10, 2023).

[42] Artist Leena Valkeapää defines herself as a helper to her partner, an indigenous reindeer herder facing tremendous problems in times of climate heating. Valkeapää in a Zoom meeting with Yvonne Volkart, 2020.

[43] Erich Hörl means by this the "assemblage of human and non-human entities that can no longer be described at all with the terms that come from the sphere of the instrument, the tool, the simple, trivial, classical machines." Erich Hörl and Jörg Huber, "Technoecology and Aesthetics. An Exchange of Ideas," *The Magazine of the Institute of Theory,* 31, no. 18/19 (2012), pp. 9–20, here p. 9.

[44] In German, it is easier to distinguish between *Technik* and *Technologie* than in English.

[45] Teresa de Lauretis, *Technologies of Gender: Essays on Theory, Film, and Fiction* (Bloomington: Indiana University Press, 1987).

[46] Michel Foucault, *The Use of Pleasure*, Vol. 2 of *The History of Sexuality* (New York: Vintage Books, 1990), p. 6. He emphasizes that self-care is a choice that the individual makes within the dispositifs of power.

[47] Teresa de Lauretis, "Popular Culture, Public and Private Fantasies: Femininity and Fetishism in David Cronenberg's 'M. Butterfly'," *Journal of Women in Culture and Society*, Vol. 24, No. 2 (Winter 1999), pp. 303–334.

Fig. 1: Video still from Ursula Biemann, *Acoustic Ocean*, 2018.

Technologies of caring are thus technologies, techniques, practices, and aesthetics in art that enable, poeticize, celebrate, and deploy caring for the Earth as a political practice of desire and recuperation: as a reappropriation of what has been rendered impossible in the history of capitalism and its values of compartmentalization, individualization, and competition, and their altruistic flip side, paternalism and control:[48] an ethics and aesthetics of care as becoming and acting together with the others with whom I share life on Earth, co-creating—knowing that everything I do has effects on others and returns in some way: not because I am human, rather because I am a material being, immersed in the energies, the physical laws of the Earth. The concern for others is also a concern for (the strangeness in) me, for the dependence of my existence on the multiplicity of further existences.

Programmatically speaking: technologies of caring—in the midst of the flood of images and information permanently calling to us and the consequent paralysis—spark porosity and desire *to see, to hear others*. This desire makes us receptive to the chaotic forces of the world and strengthens our imagination in response to the question of how to float the raft together. It ignites the passion to engage with others, with earthbound ones, and to focus on nurturing these relationships.

## THE MANY WAYS OF CARING

The term *care* or *caring* was contested even before the Corona pandemic (recall the feminist Care Strike 2019): On the one hand, it was problematized for its instrumentalization for economic, colonial, and personal purposes (including paternalism). On the other hand, as a practice of interest-led action and response, it became an overarching concept of hope for systemic change. Art also intervenes in this change: If we want to think, to live other worlds, then we need caring relationships.[49] For

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[48] On the techno-eco-feminist reappropriation or "counterappropriation" (Thomas Edlinger) of metaphors of flowing, see Volkart, "Flowing, Flooding, Fibbing."

[49] Of the many references for this, a few are selected here: Joan C. Tronto, *Moral Boundaries: A Political Argument for an Ethic of Care* (London: Routledge, 1993); Aryn Martin, Natasha Myers and Ana Viseu, eds., "The politics of care in technoscience," special issue of *Social Studies in Science,* Vol. 45, issue 5 (2015), https://doi.org/10.1177/0306312715602073; Jessica Ullrich, "Who cares for animals? Interspezies-Fürsorge in der zeitgenössischen Kunst", in Manuela Rossini, ed., *Animal Traces / Tierspuren / Traces Animales,* special issue of *figurationen,* Vol. 15, 1 (2014); Tobias Bärtsch et al., eds., *Ökologien der Sorge* (Vienna: transversal texts, 2017), http://transversal.at/books/oekologiendersorge; Katharina Brandl and Friederike Zenker, eds., *TechnoCare* (Vienna: Verlag für

this context of techno-eco-feminist thinking, María Puig de la Bellacasa and Natasha Myers are central. Puig de la Bellacasa has, for example, expanded the notion of care to include permaculture in terms of more-than-human forms of subjectivation. She highlights that the different human and other-than-human actors of soil-making live in different temporalities and worlds. If one wants to improve soil management, she says, it is important to take this fact into account. Taking permaculture, for instance, she discusses caring, even healing relationships with the soil—in contrast to conventional agriculture, which, situated in the homogenously constructed time of progress, only drains it through artificial fertilizers and monocultures. "Maintenance and repair" had been *the* paradigm of agriculture until the twentieth century. Only with modernization and the green revolution did "maximization of soil beyond the renewal pace of soil ecosystems" become the new ideology.[50] Similar to Puig de la Bellacasa's approach to care with soil, Myers pleads for "other ways to feel, to think, and know" with plants. Specifically, "art, experiment, and radical disruption" as well as hybrid technologies would help us to learn to sense and act otherwise.[51] Thus, more than Puig de la Bellacasa, she thinks together cross-species attention, contested techno-organic boundaries and care with art and re-appropriated (laboratory) technological approaches.

"Care ethics is often thought to be just about caring *for* someone, but it is essentially a relational ethics," writes animal ethicist Lori Gruen.[52] So no matter how one defines or critiques care, it always has a direction toward the other and presupposes a disposition to open up to alterities. This is a promise today, at the height of our planetary ecological, social, and political crisis.[53] Ironi-

cally, the politics of total exploitation, including the exploitation of care workers, the privatization of the care sector, and the failure to address the suffering of colonialism, also has devastating economic consequences for the Global North. Not least because, as Maria Mies and Silvia Federici noted back in the 1970s, capitalism is based on the reproductive sector.[54] The devaluation of time-consuming reproductive work and its use for the functioning of the capitalist economy goes hand in hand with technological upgrading in agriculture, the kitchen and the care sector. The current demands for recognition and fair payment of care and reproductive labor connect to demands of second- and third-wave feminism, but they also transcend them: too quickly, during the discourse-based feminist expressions of the 1990s, activities and physicalities related to reproductive and care work were suspected of essentialism or backlash; interestingly, this was countered by the tech-savvy cyberfeminists with their revelatory reference to mothering and metaphors of fluidity.[55] The radicalization of the dispossession and wasting of bodies and land, to which even privileged people of the Global North increasingly fall prey today, highlights the need for re-productive practices of care. The extent to which the situation has changed, also with regard to the recognition of self-care, is indicated in the citation of Angela Davis by the editors of "Radical Care":

> In a recent interview, Angela Davis explicitly tied social change to care: "I think our notions of what counts as radical have changed over time. Self-care and healing and attention to the body and the spiritual dimension—all of this is now a part of radical social justice struggles. That wasn't the case before."[56]

Moderne Kunst, 2019); The Care Collective, eds., *The Care Manifesto: The Politics of Interdependence* (New York: Verso, 2020); Jasmin Degeling and Maren Haffke, eds., *ZfM. Medien der Sorge,* 1/2021, https://zfmedienwissenschaft.de/heft/archiv/24-12021-medien-der-sorge; Manuela Zechner, "To Care as We Would Like to: Socio-ecological crisis and our impasse of care," in Journal Berliner Festspiele, Gropius Bau, 2021, https://www.berlinerfestspiele.de/en/gropiusbau/programm/journal/2021/manuela-zechner-to-care-as-we-would-like-to.html; Bonaventure Soh Bejeng Ndikung, *Delusions of Care* (Berlin: Archive Books, 2021); Elke Krasny et al., eds., *Radicalizing Care: Feminist and Queer Activism in Curating* (London: Sternberg Press, 2022); Valeria Graziano et al., eds., *The Pirate Care Project*, https://pirate.care (all URLs accessed January 28, 2023).

50  María Puig de la Bellacasa, "Making time for soil: technoscientific futurity and the pace of care," *Social Studies of Science*, Vol. 45 (2015), pp. 692–716, here p. 699; María Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds* (Minneapolis and London: University of Minnesota Press, 2017).

51  Myers, "How to grow livable worlds"; Martin, Myers, Viseu, "The politics of care in technoscience."

52  Katharina Brandl and Friederike Zenker, "Caring Technologies. An interview with Lori Gruen," in Katharina Brandl and Friederike Zenker, *TechnoCare* (Vienna: Verlag für Moderne Kunst, 2019), p. 28.

53  Martin, Myers, Viseu, "The politics of care in technoscience," pp. 10–11.

54  Maria Mies, "The Subsistence Perspective," transcription of a video by Oliver Ressler, recorded in Cologne, Germany, 26 min., 2005, https://transversal.at/transversal/0805/mies/en (accessed March 11, 2023).

55  For example, Alla Mitrofanova, "Pregnancy as a Philosophical Problem," in *n. paradoxa,* vol. 2 (1998), pp. 49–51.

56  Hi'ilei Julia Kawehipuaakahaopulani Hobart and Tamara Kneese, eds., "Radical Care," special issue of *Social Text*, vol. 38, no. 142 (2020), p. 1.

Concern thus becomes the micropolitical basis "for creating 'alternative livable relationalities' within otherwise dominant configurations."[57]

Even etymologically the German *sorgen* and the English *to care* have many meanings. Derived from Germanic, they range in English and German from *to grieve* and *to lament* to *to be troubled*, *to be concerned*, *to pay attention*, *to attend*, and *to love*. Despite the similar sound and meaning, *care* is not related to the Latin *cura* and the *curate* derived from it.[58] The German *Sorge* (Middle High German *sorge*) is related to the New English *sorrow*.[59] Also the Middle High German *Kar* ("sorrow", "grief"), *as* in the word *Karwoche* ("Holy Week"), roots in the Old English *cearu*.[60] What is unmistakable in both languages is the etymological change from a negative to a positive occupation, as if working through "being troubled," "staying with the trouble," to use Donna Haraway's phrase, opened up other horizons. In this sense, then, *caring* here always means "a critical survival strategy for enduring precarious worlds."[61]

## ART AS TRANSLATING, AS TRANSMAKING AND TRANSBECOMING OF THINGS

Art, insofar as it translates reality into something different, appears by definition to be suitable for making diverse forms of alterity experienceable. It becomes a field of action in which seemingly immovable realities can be experienced differently through transformations. It is a structure that can shift the normalized view of things, introduce differences, and make things happen differently—even if only temporarily or as a game. "Why are you, as a lawyer, presiding over a tribunal of opinion, a theater tribunal?," quotes theater director Milo Rau from the exchange between Jean-Louis Gilissen, who works at the International Criminal Court in The Hague, and a colleague there.

> And Mr. Gilissen replied, "Because a court like the 'Congo Tribunal' can only happen on stage right now." He is right:

the "Congo Tribunal" is a symbol, a sketch of justice. It exists precisely because it legitimizes itself from within itself, constitutes itself ever anew through its practice, and not because it was established by any legal body. The Tribunal will therefore exist precisely until the official legal and political institutions want to begin their work.[62]

By enabling perceptions that are not based on identification, art can tear apart fixed contexts and create ruptures. Of course, art does not do this because it is art and occupies a privileged social place. As I will show on the basis of the selected examples, these are ethical-aesthetic processes of shifting meaning that must be staged again and again—medially, materially, socially—towards movements that, despite precise settings or "well-intentioned" intentions, cannot be precisely defined. These shifts, these translations generate moments of being different, of being foreign, of non/sense, of poetry. In this calculated strangeness of things and their incalculable strangeness, still and again lies the potential of the aesthetic. It can break open naturalized ideologems and so permit us to participate in and through the fundamental indeterminacy of existence. It pulls us into the unavailability of things, lets us become outside ourselves, produces (sense) surpluses, opacity. The machinic, non-human, close to the phenomena and forces of the other-than-human operating techno-eco-aesthetics challenges the conventional concept of art, especially in the interdisciplinary links of art and science. Furthermore, it centers the quest and leads us with and without (measuring) technology to the imprecise, appreciated and touching (back).

With Félix Guattari, I read the artistic projects discussed here as actants of an "eco-logic": a psychic, corporeal, non-rational "logic of intensities" that affectively and generatively produces things.[63] Eco-logic means (pre-subjective) forms of existence in which beings and things *become* (or do not become) *with each other*. So my question about how something is aesthetically *realized* is interesting because it has *real effect* as an "ethical-aesthetic" practice. Because it interacts, produces alterities,

[57]  Puig de la Bellacasa, quoted in Martin, Myers, Viseu, "The politics of care in technoscience," p. 10.

[58]  Oxford English Dictionary: https://www.oed.com/view/Entry/27899?rskey=4U96cx&result=1 - eid (accessed March 11, 2023).

[59]  Friedrich Kluge, *Etymologisches Wörterbuch der deutschen Sprache*, 22nd ed. (Berlin and New York: de Gruyter, 1989), p. 680.

[60]  Ibid., p. 356.

[61]  Hobart and Kneese, "Radical Care," p. 2.

[62]  Milo Rau speaks of "institutionalized irresponsibility": "The question is what we do with the knowledge," *WoZ Die Wochenzeitung*, January 6, 2022, pp. 20–21, here p. 20.

[63]  Guattari, *Three Ecologies*, p. 44.

and *subjugates* subjects. *Technologies of Care* is thus also a plea: for practices of M-othering, for generating re/productive forces that do not reject the other as rejected or incorporate it into one's own self, but rather recognize the otherness of the other (also of oneself) and develop care out of this recognition of radical strangeness and alterity. M-othering is the other practice of othering; the connecting or separating line does not denote the either-or of the slash (M/othering), but the search for connections where there are differences. Caring as M-othering thus means a mode of existence of coming into/over/being together, beyond the well-known idealization of the (woman as altruistic) mother. It is an event that, being reproductive, *is* again and again: again and again the same and yet *different*. (Again and again: wiping away shit, drying up, feeding).

In this context, the question arises whether a word like "eco," which emphasizes the unholy alliance of ecology and economy, makes any sense at all? *Oikos* means the "house," "the household," "the habitat" in Greek. Emanuele Coccia criticizes that we thereby equate the terrestrial, of all things, which goes far out and reaches into the atmospheric, with the narrow human sphere: the home, the property of the patriarch.[64] If we consider that our global *habitat* is not only occupied and proprietarized, but also reduced to a resource and capitalized, this critique can be agreed with: *ecological economizing* is also often not much more than *greenwashing*—extending the business sector to the next, higher level. But there are ecology approaches based on cooperation[65] and disruption that are closer to what is of interest here: "New developments in ecology make it possible to think quite differently by introducing cross-species interactions and disturbance histories."[66] Or Nicole Seymour's queer interactions: "Queer values—caring not (just) about the individual, the family, or one's own descendants, but about the Other species and persons to whom one has no immediate relations—may be the most effective ecological values."[67] *Oikos* is neither the coercedly harmonized "home," where everything has its economic use, nor the nostalgic "house of being": it is the jointly inhabited space—a place of relations, not only of affiliations. It is made of micro-economies, intensities and forces, full of porosity and opacity. As feminists, we know that

power and violence permeate the interior, that the separation of interior and exterior is a phantasm. It is precisely because the household has been degraded to the place of women and children, of others, to the place of inferior services, and precisely because its centerpiece—the kitchen—has been technologically upgraded but not valorized in modernity, that it has potential to be queered: the *oikos* of techno-eco-feminism is im/possible living together, and does not distinguish between the self and the other, the human and the non-human. "I look for disturbance-based ecologies" writes Lowenhaupt Tsing, focusing on forms of living together that need not be harmonious or competitive.[68] With her and the projects discussed here, we focus on circuits of pulsating forces, tangles of more-than-human beings that dabble in touch and concern.

## PREVIEW

The chapters of *Technologies of Care* fan out along the basic etymological meanings of *caring*. By means of variations, deviations, and repetitions, they attempt to narrow down the polyphony, counter-directionality, repetitiveness, and insistence of caring. The introduction, "Being Troubled" names the starting point: We are troubled! And we ask: How to survive? How to intervene in the permanent wasting of the world? "Being Concerned: Sensing a Damaged Forest" uses the example of forest research to show how scientists and artists are addressing the catastrophic situation. They seek to understand, communicate, and inspire passions about forest concerns. The focus is on our research project and the different technologies of forest sensing. Caring as a passionate preoccupation—concern—with cross-species alterities finds itself preferably situated in the field of art and science: thus, Marcus Maeder, Rasa Smite/Raitis Smits, Karine Bonneval and Agnes Meyer-Brandis work closely with forest scientists whose technologies and methods they conspiratorially appropriate and misuse. They translate them into scenarios that don't work out without gaps; they create surpluses and "distortions" whose strength lies in the strangeness of things. Thus, instead of detachedly following numbers,

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[64] Emanuele Coccia, "Nature is Not Your Household," in Latour and Weibel, *Critical Zones*, pp. 300–304.

[65] See Hörl, footnote 36.

[66] Lowenhaupt Tsing, *The Mushroom at the End of the World*, p. 5.

[67] Nicole Seymour, quoted in Heather Davies, "Toxic Progeny: The Plastisphere and Other Queer Futures," *philoSOPHIA. A Journal of Continental Feminism*, Vol. 5.2 (Summer 2015), pp. 231–250, here p. 232.

[68] Lowenhaupt Tsing, *The Mushroom at the End of the World*, p. 5.

curves and diagrams, the audience can become part of vibrating eco-events whose opacity is touching. *Caring* requires attentiveness, especially in one's own work. To the extent that it is not head-centered—if we follow Tim Ingold—but instead responsive, immersive, and ecological, it provides the conditions for a cross-species aesthetic. "Paying Attention: From the Laboratory to Labbing" discusses how the artistic fascination with the laboratory and its instrumental techno-aesthetics transforms into experiments in cross-species responding. Projects by Pinar Yoldas, Alexandra Toland, Mindaugas Gapševičius', Humus Sapiens and Ursula Damm will be discussed. *Caring* is *"going along* with others, as in joining and accompanying."[69] That's why the chapter "Going Along: WasteMachines" enunciates: I am there, part of the wasting of world, part of the grief and anger about it. Witnessing. The example of lithium-ion batteries and our research project *Times of Waste* is used to negotiate our approach to the wasting of raw materials. In the project of Unknown Fields, the original meaning of *caring*—as *grieving* and *lamenting*—appears in a non-human concatenation, and the mythical dimension of impotent mourning transforms into witnessing and resisting. "M-othering: Tending and Healing" considers the proposition that to survive (the catastrophic), to thrive and become, we need atmospheres in which to heal and be healed. Wanuri Kahiu, Leena and Oula Valkapää and Špela Petrič demonstrate caring as becoming m-other: forms of transformation, of growing and repairing, of inclusion and expansion of alterity that transcend gender and species boundaries. The formal proximity produces the meanings *mothering, othering, not othering*; in short, a mothering that embraces rather than excludes the other and becomes other together. *M-othering* is the condition for environmental becoming to be a planetary mode of existence and not another possibility in the set of privileged subject positions. *Caring,* then, is always: touching oneself/others; it is going (out of oneself), connecting, becoming collective, exceeding the mark, and at the same time coming (back) to oneself: "Exceeding: Toward an Aesthetics of Attention." Leaving one's own house and arriving at the *oikos of* the Earth, its unpredictable, chaotic, cosmic forces. This is care as surplus and excess. Surplus generates where something fits and does not fit, where there are disturbances, where opposites and incompatibles coincide polyphonically and not homogeneously, where meaning is generative and machinic, through addition and adjacency, where poetry is opacity. Even more than the respective meanings of *to care,* it is therefore the word's both difference-creating and unifying facility that is promising—especially for aesthetic concerns that aim at poetizing dual opposites. *Technologies of Care* are polyphonic, mutable, open, context-specific, yet always directed toward an other: They are out of themselves and with themselves, excessive and close to matter—allowing us to experience the radical unpredictability of terrestrial being. The most promising works do this in cool, funny, contradictory or incomprehensible ways. They give us and themselves the space to be different. After all, projects that are about feeling, empathy, love, etc. always run the risk of becoming pathetic or talking things to death. Aesthetic methods that create restlessness, contradiction, closeness—in short, care—are therefore able to affect more than those that want to say everything in a comprehensible way.

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[69]    Ingold, *Anthropology*, p. 21.