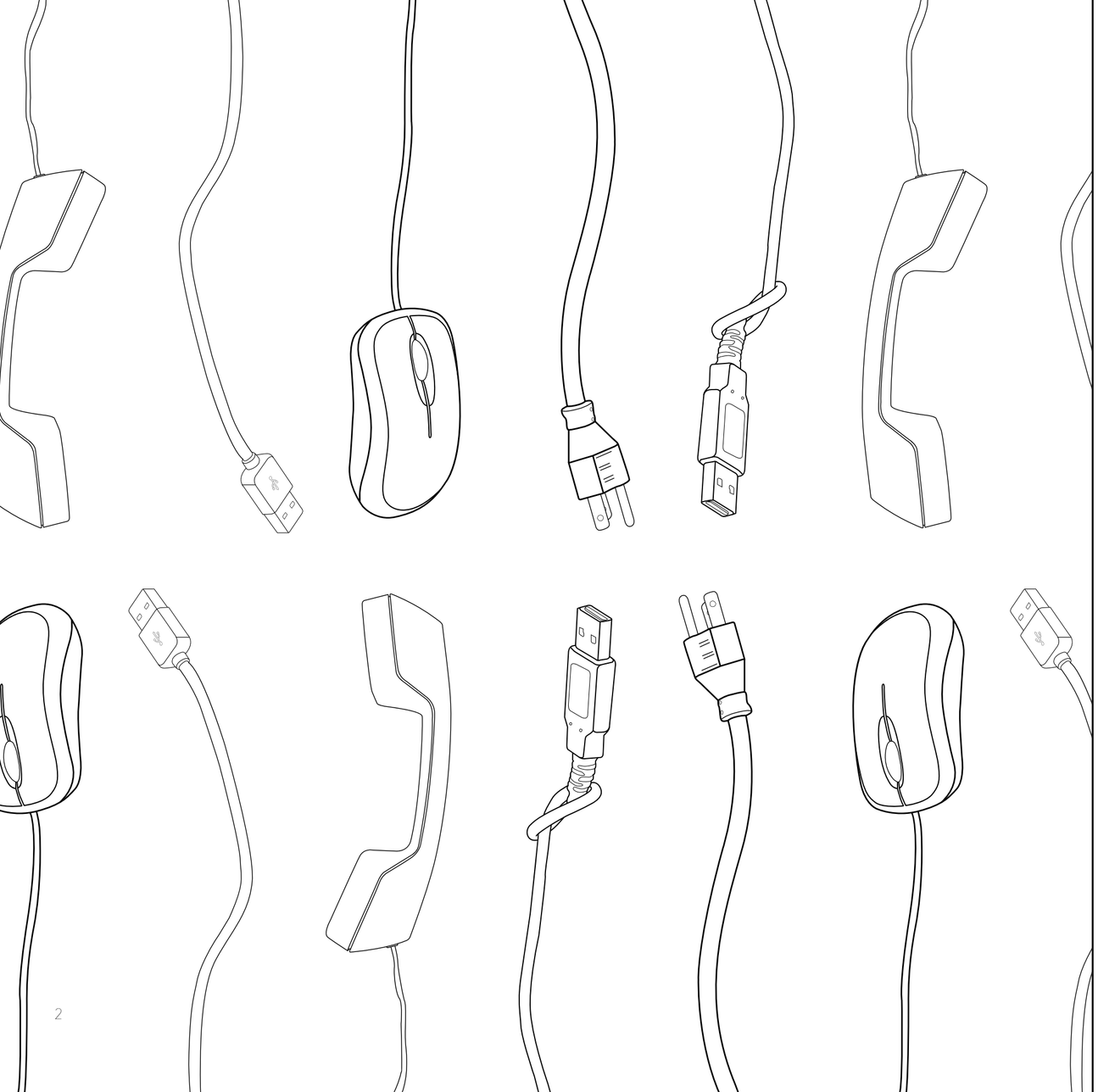
THE WORLD AFTER US

Imaging techno-aesthetic futures

Nathaniel Stern



THE WORLD AFTER US

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We are reborn
We are one again
We are all kin
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Previous Left: *Phoney Plant*, Sculpture, 5 x 8 x 8 in, and Print, 8 x 10 in
Right: *Sporadical*, Print, 54 x 36 in

About This Project

The World After Us: Imaging techno-aesthetic futures is Nathaniel Stern's traveling solo exhibition of sculptures, installations, prints, and photographs that combine plant life with electronic waste, and scientific experimentation with artistic exploration. They take the forms of: a wall-hung jungle of computer detritus and biological reclamation; fossilized and reconfigured phones and laptops; and reimagined and re-formed electronics.

What will digital media be and do, after us?
What will my laptop, phone, or tablet look like in a million years?
How will our devices weather or grow over time?
What else might our techno-waste be, and how might we sense and feel this?
Where might electronics lead our environmental and economic politics?
Can we plan and act toward new and different futures?

This body of work transforms what we discard so as to rethink conversations, thoughts, and actions around media production, use, and waste. At stake, whether in our everyday interactions or on a much larger scale, are the relationships between humans and the natural world on the one hand, between politics and commerce on the other.

The World After Us premiered at the Museum of Wisconsin Art's downtown Milwaukee space - MOWA | DTN, in the Saint Kate Arts Hotel - in January 2020, and is generously supported by the University of Wisconsin-Milwaukee's Office of Research.

Left: *Towering* (detail), Four Sculptures Between 8 and 12 ft


DUKANE


DUKANE

The World After Us: Imaging techno-aesthetic futures

Introduction by Nathaniel Stern

Look.

An almost two-foot by two-foot mushroom sprouts from bits of moss and dirt, in front of a light blue background. It is *huge*, and a bit left of center in its photographic print – which is itself nearly five feet wide and three feet high. An oversized water droplet is about to break free from the fungus fruit's gilled and spore-producing underside, which serves to amplify the "scaled-up"-ness of the image. Our eyes scroll down to the shiny pink garden bed in which all this life sits. The planter has four odd, too-regular holes facing us, and strange foamy arms on either side. In contrast to the wet and dirty, biological feel of the moss and toadstool above, the bed sits atop an almost clinically clean surface, where we see its soft reflection.

On closer inspection of the metallic square bed and its extensions, we realize that the spongy arms are actually two sides of a rubber wristband, and everything else quickly snaps into focus. The metal bucket full of dirt is a very familiar rose gold color. The holes in the side are for a microphone and speaker. There is a printed-on-plastic circuit board in and among the flowerless plants and dirt.

The photograph we're studying, entitled *Sporadical* (this and all forthcoming puns intended), stages – of all things – a gutted Apple Watch bursting with life. And this photograph is how we are introduced to *The World After Us: Imaging techno-aesthetic futures*, my traveling exhibition that this catalog thinks-with.

What this image stages, or depicts, or represents (at least in the everyday sense of the word "represent"), is less important than what it *does*. It *resituates* life and technology, Earth time, human time, and technological time, together. It *speculates* on what life may spur and flourish, how techno-minerals might diffuse and grow, beyond our and nature's imaginings. It *wonders*, What will digital media be and do, in and with the world, after us? And, it *proposes* a cybernatural future that is neither apocalyptic nor utopian, but – at the very least – a possible commingling of the supposedly conflicting categories of non-human biology and human engineering. Yes, *Sporadical* resituates, speculates, wonders, and proposes; and it asks us to do the same.

Resituate, speculate, wonder, and propose.

That phrasing sounds kind of *pretty*, doesn't it? It is, sometimes…my flowery yet critical description for what *aesthetics* do more generally. And just like these very words, the image I'm describing pushes and pulls, with some power and some irony, with color, light, and ink, inside and outside of a frame and that frame's context. Words and artworks can and do inaugurate and facilitate, redirect and magnify, *thoughts* and thinkings that are at some times explicated, at other times implied, and yet other times still stretching themselves out and about: forming and folding, being and becoming. *Aesthetics*: whether with art, text, politics, or the everyday, are a *style* of looking-, and showing-, and telling-with, as argument. Style is not only the manner in which we do things; it is the look and feel, the sensations that try to make sense, the ways in which we make a case. And style, humorous or sad, affective or cold, should never be underestimated. It is an *orientation* toward thought, and thus action.

Left: *Sporadical* (detail), Print, 54 x 36 in
Right: *Refraction*, Print, 14 x 35 in

Mark Foster Gage, in his edited collection *Aesthetics Equals Politics: New Discourses across Art, Architecture, and Philosophy*, argues that aesthetics are not "illusory, subjective, or superficial," but can act as a "more encompassing framework for human activity."[1] His is an "Aesthetic Activism" that serves to "ignite an interdisciplinary conversation," make invitations "toward curiosity rather than indicating the development of any immediately applicable theories or strategies for implementation in any particular discipline."[2] Gage wants aesthetics to include "a far more encompassing position… to claim the larger territory of relations between sensible aspects of individual, community, physical, and social life." He claims that "aesthetic discourse" is a "fertile territory for the cultivation of new and important ideas that address human rights, social justice, and questions of ontological reality and equality."[3] Here, aesthetics is *always* a form of activism, in what it opens *and* what it does. Following Jacques Rancière (among others), Gage is basically claiming that there is an inherent aesthetic dimension to politics, and vice versa.

My own latest book makes a similar case, but does so in *practice*. Here aesthetics are that given *style* of thinking-with that are always at play, *in* and *as* artworks and things and their descriptions, texts and images, people and peoples. In *Ecological Aesthetics: artful tactics for humans, nature, and politics*, I write with and around artworks that plead with us: to continuously think – and act – with the world and its inhabitants, both human and nonhuman; to orient ourselves in ways that we might find and express what our environments, and what they are made of, want; and then to decisively help and continue those thoughts, wants, and actions toward novel aims and adventures.[4]

[1] Mark Foster Gage, *Aesthetics Equals Politics: New Discourses across Art, Architecture, and Philosophy* (MIT Press, 2019), inside cover.

[2] Gage, vii.

[3] Ibid, 5-6.

Ecological Aesthetics is full of stories, of stylized narrativizations, which themselves do what the artworks they describe do. These are stories about art and artists; stories that think and change; stories that deconstruct and distill; stories that make and provoke new stories, new pasts, presents, and potentials – *all felt and thought*, both affectively and on reflection. They invite a reorientation of everyday and not-so-everyday politics around humans and nature, matter and things, and more. And those stories and their aesthetics, at least in part, inspired this *new* story (or stories), exhibition, catalog, dialog, and more. Aesthetic Activism begetting Aesthetic Activism, and back and forth and again.

The World After Us: Imaging techno-aesthetic futures itself grew from many aesthetic, political, and technological questions, but a central one that catalyzed initial production was this:

What will my mobile phone look like in a million years?

I asked this, maybe, three or so years before I write these words. I stared at the device in my hand – at the time, an iPhone 8 in a plastic hard case – with some of my art printed on it. I didn't wonder about its future from a *design* perspective, but rather thought of it in terms of something I would eventually throw away.

After it is abandoned, I think, the screen will probably crack first, then it will slowly turn to dust. The battery will probably also split and fissure, then leak, leeching into the soil and perhaps our water supply. The circuit board will erode, but the metals and cardboard and plastics that are part of it will all do so at different speeds.

[4] Nathaniel Stern, *Ecological Aesthetics: artful tactics for humans, nature, and politics* (Dartmouth College Press, 2019).

Left: *Fried Phones* (detail), Sculpture, 16 x 17 x 15 in, and Print, 10 x 8 in

Next Spread: *Aloe World*, Sculpture, 32 x 16 x 24 in


DELL
Intel
Core 2
Duo

I shook my head in resignation as I realized that the plastic case, probably the thing I love most, had the least value both monetarily and from a utilitarian standpoint (since it only fits this model phone, and won't fit the next one), and it will take the longest to decompose (if it ever does).

At least, that's what I *thought* was likely to happen. I didn't *know*.

But, as both a trained artist and engineer, I wanted to find out. To see, test, experiment, play.
I began to ask other questions.

> How *will* our devices *weather* or *grow* over time?
> What else might our techno-waste be, and how might we *sense* and *feel* this?
> Where *could* computer media lead our environmental and economic politics?
> Can we *plan* and *act* toward new and different possibilities and potentials?
> And in this, might we *image* – that is, aesthetically beget – more sustainable technological futures?

I started "imaging techno-aesthetic futures" by weathering devices.

For *Phossils* – eg "fossilized phones" – I subject media devices to extreme heat and cold, artificial pressure and geological time, or other intense conditions that "weather" and turn these materials into… something *else*. Through research, experimentation, and craft, I try to transform phones into crude oil, coal, or other fossil fuels, into synthetic archives and simulated relics for a future time. Cook, freeze, burn, smash, blend, and more… and put the results on exhibit, in beakers and tubes, on pedestals and stands, as archaeological finds and/or photographic images. Several of the *Phossils* series of sculptures also more readily reveal the lab/studio methods I used, and two of them break down over the course of the exhibition itself. What I call *Ecokinetic Sculptures* see a pile of phones that have been melted in an air fryer, a phone in a toaster, a live water fountain that cracks and peels the glass off a different iPhone over the course of each show (more quickly than one would expect), and a flipping hourglass that similarly sands down a smart phone every sixty minutes.

I have heard my studio visitors exclaim, "That was my first phone!" and "God, I hated how that one felt on my face," or ask, "Have you tried stomach acid?" and, "Want to do extreme freezing and smashing in my lab?" (the lattermost from a civil engineering colleague. Um, yes, please!). There's a kind of seriously playful, and playfully serious, intervention into both the emotional and utilitarian relationships we have with our mobile devices when we think of them not only as a way of connecting, but also as our *personal* garbage, as a raw material, as clay or slime or so much plastic and solder and toxins, as *matter* that matters.

I moved into spaces of non-human life.

Server Farms are computers and other technological equipment repurposed as planters. These sculptures and photographs take cues from journalist Alan Weisman's provocative book *The World Without Us*, which also inspired the title of the exhibition. Weisman wonders how quickly non-human life would re-take the planet if humans were to suddenly disappear - and found that the answer is, simply, not very long.[5] He begins with stories of plant life retaking the cities, whereas I physically manifest botanically occupied electronic waste alongside and *as* experimentation and exploration. A gutted iMac, face up, where the screen and motherboard are replaced with wheat grass (*Apple Grass*); a Dell filled with spider plants (*Farm in the Dell*); aloe sprawling from a computer

[5] Alan Weisman, *The World Without Us* (Picador, 2007).

Left: *Plug*, Sculpture, 5 x 7.5 x .25 in, and Print (detail), 16 x 10 in

tower (*Aloe World*); a three foot protea reaching skyward from an upturned speaker (*Resonant*). I root trees in laptops, grow molds and fungi in and around tablets, inject watches, phones, and cameras with shrubbery, spores, and microscopic life – then let each flower, flourish, incubate, and spread. What life may spur, how might techno-minerals diffuse? These cybernatural works suggest alternatives to current modes of life and living, science and sensation, waste and production, perception and action.

And I also asked, can we reinvent what digital waste might be and do *right now*?

Utilities see electronic waste re-thought as a raw material, and transmuted into other (somewhat) usable forms. In *Phonēy Prints*, for example, mobile phones are ground into a fine powder, and mixed with extender to turn them into ink for fine art prints (of phones, obviously), on paper made from my old t-shirts. *Applecations* see melted aluminum iMacs from the late 2000s cast into a hammer, screwdriver, and wrench. And *Circuitous Tools* are computationally carved circuit boards turned into a saw, axe, and trowel. These ask viewers to be curious and imagine, to test, play, and transform. We should not only ask what digital media will be and do, after us. We must reinvent what digital waste *can* be and do, in the present.

The World After Us is not post-apocalyptic; rather, it imagines potential futures while asking viewers to be mindful of their media in the present. The title's "After" – like postinternet and postmodern – includes *now*. Every moment is, after all, "after" the moment before, and includes "us." And the word "Us," too, is not limited to its everyday definition of a group of people. "We" both make up and live in our habitats (homes and houses, streets and neighborhoods, the Milky Way), along with all the biological and nonliving things therein. It's a big "us" out there. And conversely, human bodies are themselves habitats – for fungi and bacteria, meat and plants, chocolate and coffee, and more. There is so much "not us" in "us," that we may as well include every-*thing* in how we understand ourselves.

As such, "*The World After Us*," as a title, is meant to imply a re-presentation – that is, a "presenting: again and differently" – of our relationships to time, the world, and ourselves. It is impossible for humans to truly fathom our planet on its own terms and at its own size, or conversely from the perspective of bacteria. But we can *feel* such things, through art and storytelling – making our aesthetic encounters both conceptually and ethically vital toward new futures. *The World After Us* (henceforth this may sometimes be referred to as *TWAU*), as a show, questions how we move, think, feel, and act with the Earth and its inhabitants, both living and otherwise. It is political, but speaks across political lines. It is completely physical, but asks us to think virtually, about the potentials our futures hold. It is multimedia, networked, and participatory, but not in the ways so often hyped up in and around new technologies. At stake, whether in our everyday interactions or on a much larger scale, are the (digital) relationships between humans and the natural world on the one hand, between politics and commerce on the other.

At least, that's one story I like to tell about it.

I have been told this work is hauntingly poetic. Intense yet hopeful, sad and beautiful, all-consuming around our consumption. As Josh Lepawsky reminds us in his *Reassembling Rubbish: Worlding Electronic Waste*, most "stories about e-waste, particularly those crafted by advocacy groups and the media," are meant overwhelm, to "inspire devotion" to and toward action.[6] But my intent with this exhibition differs slightly. In today's environment,

[6] Josh Lepawsky, *Reassembling Rubbish: Worlding Electronic Waste* (MIT Press, 2018), 6.

Right: *Apple Grass*, Sculpture, 16.5 x 1.5 x 14 in

well intentioned as we may be, individual action is simply not enough. Lepawsky gives some unnerving figures to talk about this. In short, literally tens of billions of tons of waste are produced yearly in, for example, Canada alone – and the figures Lepawsky cites, he reminds us, are just showing tracked data, from very dated studies, which leave out large and important sectors of production (and they ignore factors like toxicity versus weight).[7] And that's just Canada. Brought closer to this project, in 2018, more than one and a half *billion* mobile phones were sold worldwide. That's more than four million sold per *day*, and again, doesn't include the produced but unsold phones that will eventually also become waste.[8] Still, just try to picture four million mobile phones. *Four million*. Then, multiply that by 365 (and increase production incrementally, for each day).

[7] Ibid, 7.

[8] Statista, https://www.statista.com/statistics/263437/global-smartphone-sales-to-end-users-since-2007/. Accessed October 12, 2019.

It's terrifying.

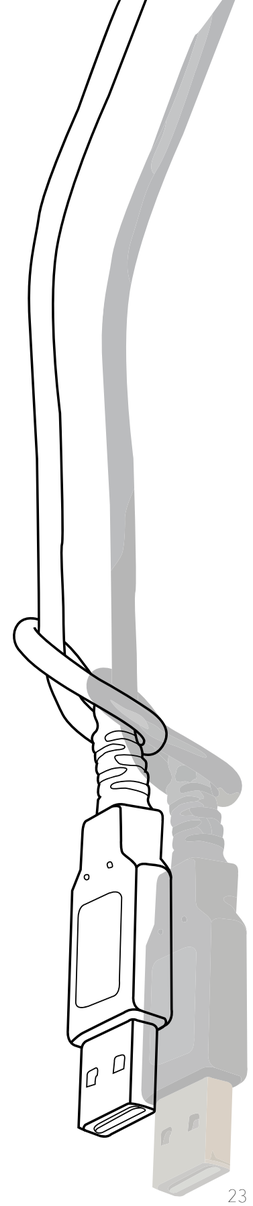
Worse still, Lepawsky unequivocally states that "resource extraction for and the manufacturing of electronics generate vastly more waste than does the post consumption discarding of gadgets" and goes so far as to say that "the hope that recycling electronics will mitigate e-waste is a false one."[9] In other words, what *TWAU* exhibits and provokes around e-waste dialog is *nothing* compared to the damage we do by digging up the raw materials to *create* that hardware in the first place. I hadn't known that last fact when I started my project, and it utterly floored me when I first encountered it. Such information and data are, in two words, *unfathomable* and *depressing*. Unfathomable, in that I cannot connect to them personally (like the difference between being a millionaire and billionaire… HUGE, but not part of my inference capabilities), and depressing precisely in that inability to *know*, or, implicit in that lack of knowledge, *act*.

Lepawski calls for matters of *concern* – where data and expert opinions conflict – to be moved to matters of *care*: who cares, for what, why, and mostly importantly, *how*. How *do* we care? Who *performs* care and whom do they care *for*? Where can we inspire care that *works*?

Care, as any steward or parent will attest to, must be both intimate and systemic in its approach. It is about rules and exigencies, policies and politics, just as much as it is about compassion and caution in the everyday, and the affects/effects therein. Care requires, by my own recent definition, an ecological approach: "an *ecological approach* takes account of, and speculates on, agents, processes, thoughts, and relations, together. We concern ourselves with how humans and nonhumans, matter and concepts, things and not-yet-things, politics, economics,

[9] Lepawsky, 15-16.

Left: *Fountain* (an *Ecokinetic Sculpture*), Sculpture, 12 x 9 x 8.5 in



and industry, past, present, and future, for example, are all actively shaped in, and as, their interrelations. We wander and wonder around 'Why?' and 'Where to?' for each. It is both an ethical and aesthetic practice to think- and act-*with* in such a way."[10] And Lepawksy and others (some detailed later on) have argued that a wide-ranging, ecological, and communal approach – both intimate and systemic – is what is absolutely necessary for climate action – e-waste oriented, or otherwise. We need *international* action, networked, political, and policy-based responsibility, in addition to *individual* action and responsibility.

In *Finite Media: Environmental Implications of Digital Technologies*, for example, Sean Cubitt "links human, technological, and organic worlds in the context of colonialism," and all that colonialism has come to mean in the current sociopolitical and economic climate: money, money, money.[11] Naomi Klein, echoing Felix Guattari some 30 years later, similarly places the blame for our continued downward spiral into a no-turning-back climate crisis squarely on the doorstep of late stage capitalism (what Guattari called "Integrated World Capitalism").[12] "Capitalism is a religion in the United States," Klein asserts. And the problem is obvious from here: our monetary system needs "continuous growth and continuous depletion of resources, including finite resources," while, in "order to avoid catastrophic warming and other dangerous tipping points" our planet needs "humans to *contract* our use of material resources."[13] Change on that scale is not something that can happen through individual action, alone – regardless of how many progressive-minded people buy hybrid cars, recycle, and unplug their phone chargers, among other things (although this, too, is essential). We need collective care, collective action, drastic changes in strategy and policy, in how we move and think and feel about and around ourselves, our sciences and technologies, our waste and environments. We require a complete reworking of the systems in which we research, fund, govern, and regulate around all of these categories, outside the realms of profit and capital, *outside* the influence of various corporate agendas.

Key for me in this project is to not only make work that is personal and affective through viewer recognition and ownership, their curiosities and a desire to produce new forms and possibilities, but also to turn the show's ongoing dialogs into larger engagements with aesthetics and ethics, politics and policy.

Here's another story.

As some of the initial production began for *The World After Us*, I knew I wanted to invite another scholar into my studio, to think with and write about the work, and what it is and does. Whatever my intentions when making art, the *things* produced (object-based or otherwise) always, of course, act beyond or differently from my initial intentions, and far be it from me to be able to perceive and articulate even the *best* of the work's images and actions, much less *all* of them. I reached out to contemporary art historian and theorist Amanda Boetzkes to pen an essay, given her expertise and poetic publications around Earth art, the visual culture of waste, and our ecological condition.[14]

Amanda came to Milwaukee and spent a few days with me and some of my studio assistants, asking questions and brainstorming, pushing ideas and pulling threads.

[10] Stern, 9 (emphasis — bolded — in original).

[11] Sean Cubitt, *Finite Media: Environmental Implications of Digital Technologies* (Duke University Press, 2017), 2.

[12] Felix Guattari, *The Three Ecologies* (Transaction, 1989).

[13] John Tarleton, "Interview: Naomi Klein Breaks a Taboo" (Indypendent, 2014). https://indypendent.org/2014/09/interview-naomi-klein-breaks-a-taboo/. Accessed October 14, 2019.

[14] Biographies for all essayists are at the end of this catalog.

Above: *The Wall After Us* (detail), Installation, size variable (up to 1000 sq ft)

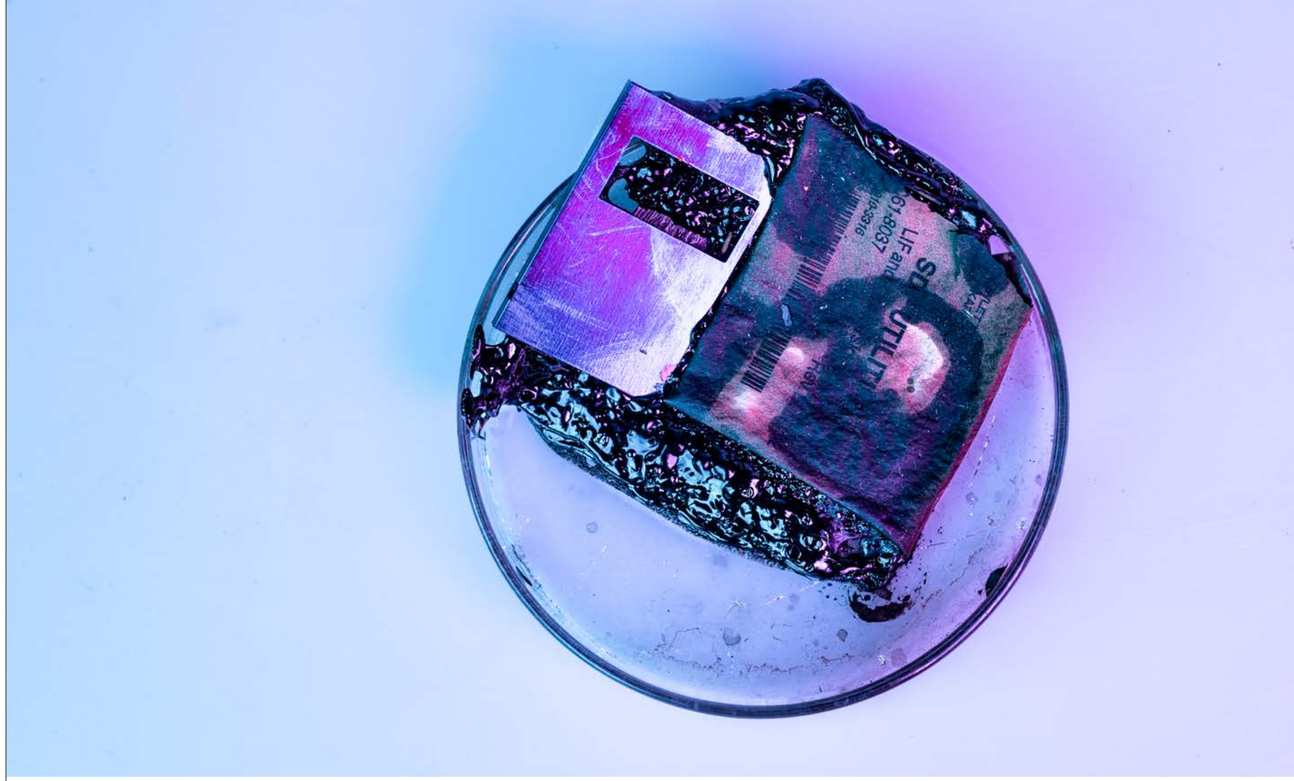
When she saw images of our sculptures (alongside the originals), she urged me to consider some photographs as not only documentation, but artworks in their own right. This simple shift in thinking opened new possibilities, again. The life cycles of the plants in *Server Farms* already change over time, and at any moment, a photograph might exhibit qualities and potentials imperceptible at other times or in other spaces. Once I recognized this, I began to produce and stage forms that would never have lasted for an entire entire exhibition, and additionally playing with scale. The mushroom and moss in *Sporadical*, for example, do not have enough space to live very long inside of my now broken Apple Watch (another story: my wife felt very guilty about dropping and breaking this device, until such time as that accident made possible her favorite print from the show). And once we decided on a photograph: the water droplet, the large size of the print, and the open background were all possible, and all add to the artwork's overall impacts of wonder, curiosity, and drive. I affectionately call the photographic series *Drivers*, and they include both studio and outdoor shots of *Server Farms* and *Phossils*.

Amanda's visit was still in the early days of this project. *Utilities* were only an idea (and went through many iterations of both work and titles before we finally chose pieces for the show); and the work was still mostly small and intimate, still taking shape and performing its own sensations and meanings and provocations as I played with new materials, concerns, and forms of care. Our conversations – which included visits to studios, labs, galleries, and museums, and some brainstorm sessions and discussions about collaboration possibilities that involved individuals from the Museum of Wisconsin Art and internal research centers at the University of Wisconsin-Milwaukee (UWM) – helped inform a lot of my thinking and production moving forward. Amanda suggested more than one essay could go much further with infolding and unfolding what *The World After Us* is, does, and asks for. Thus, this larger catalog with multiple contributions was born.

In her own essay, "Technophilia *Entre-Nous*," Amanda thinks-with the *Server Farms* sculptures and images and ideas, among other things. She starts with Slavoj Zizek, who argues that "'The world without us'…is fantasy at its purest: witnessing the earth itself retaining its pre-castrated state of innocence, before we humans spoiled it with our hubris."[15] But what kind of fantasy, she goes on, is "the world after us"; a world that emerges after its presumed despoliation at the hands of humans? Where the former fantasy occludes human subjectivity in order to experience nature in a virginal state and without guilt and responsibility for always already having defiled and destroyed it, the latter proposes an alternative resolution to the "eternal adversaries" of Eros and Thanatos at play in the ways we imagine the futurity of the earth. Boetzkes argues that *The World After Us* works through the dilemmas of the geological future with an insistence on the human touch. This touch, however, is

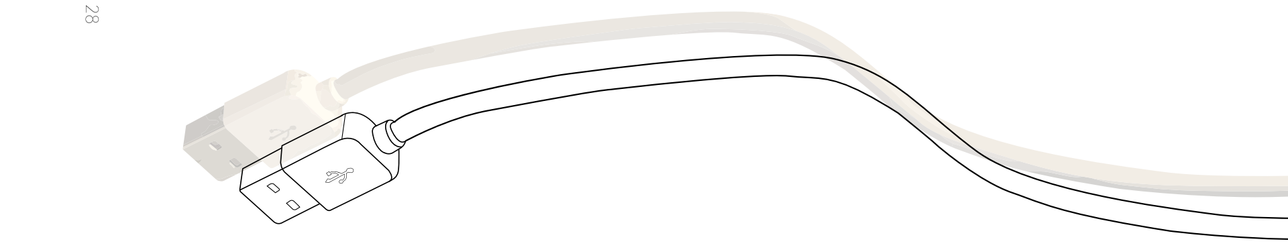
[15] Slavoj Zizek, *Event: A Philosophical Journey Through A Concept* (Melville House, 2014), 23.

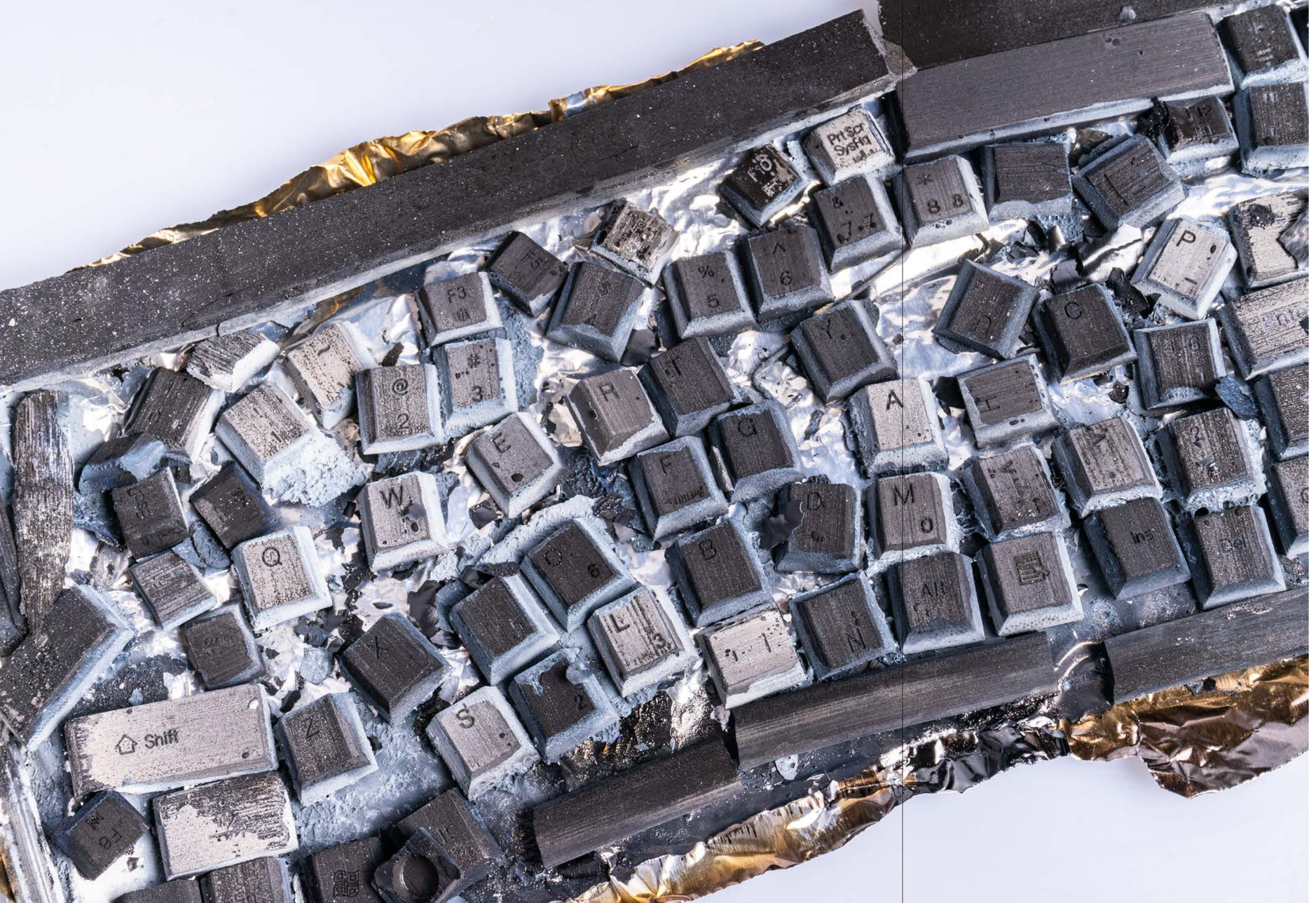
Left: *Towering*, Four Sculptures Between 8 and 12 ft



Above: *Petri*, Sculpture, 4 x 1 x 4 in

heterogeneous, invested with both technophilia and biophilia in equal measure. "Stern's photographic and sculptural practice," she says, "brings our proclivity for the mass production of media technologies into confrontation with its earthly impact." *TWAU* is not a lifeless post-apocalyptic landscape. To the contrary, this futurity discloses an insistence on *handling* our technophilia in concert with nature. Media devices have been crushed, pulverized, dissolved, and otherwise submitted to corrosive forces in a speculative laboratory. But even as they have been corroded, they give rise to proliferations of plant life which charge the images with pleasurably intimate affects. In her essay, Amanda goes on to argue that *TWAU* operationalizes what Jacques Rancière calls the "archaeomodern perspective": civilization read from the perspective of its discontents. The contemporary era reveals the channels of resource extraction and earthly exploitation that are integral components of the paradigm of human exploitation: labor, and Earth-based, and more. Amanda argues that the exhibition ultimately sets human relations into play with planetary life, invoking all the perturbations, expressions, and gestations of agonistic exchange. *TWAU* is not simply excavating buried human histories, but





rather undertakes an operation of imagining a geological future as a way of reconsidering human history in its convergence with the planetary. It is between the surfaces of the tools, devices, appliances, and plant life that a new *geosociality* emerges. New intimacies appear in an alien time and place, where human myths of nature have been dispelled, our drives burnt out, and our environmental impact rendered meaningless.

When Amanda and I met with Laurie Winters and Tyler Friedman, the Director and Curator at the Museum of Wisconsin Art, respectively, Laurie compelled me to think bigger – literally. I had done a 250 square foot wall-based installation as my last solo exhibition in their space, and the affective impact in and around its immersive imagery was intense. I began wondering… what if it isn't only the plants that will thrive and grow, after us? What if electronic waste itself were to replicate and multiply, incubate and spread? What could that look and feel like? What would an installation like this *do*?

My playfully titled, *The Wall After Us,* is a site-conditioned installation that attempts to bridge from the unfathomable and depressing, to an individual understanding and responsibility on a larger scale. Taking between 250 and up to 1000 square feet of space at a given exhibition, it exhibits laptops, keyboards, tapes, drives, phones, circuits, and other degraded electronic waste, intermingled with cables and plants, all clinging to and climbing up the walls to create an overwhelming and affective sense of what we use and throw out, what it might grow into, and how the Earth may (or may not) claim it. Towers of e-waste, between 8 and 12 feet tall, also come off the wall, out and into the viewers' space, implicating them, their media, and their bodies, in the ecologies at play in and around humans, nature, and politics, waste, media, and utility.

Previous Spread: *The Wall After Us / Towering* (detail), Installation, size variable
Left: *QWERTY*, Sculpture, 12 x 1 x 5.5 in

Feminist media art historian Kate Mondloch speaks about her personal relationship with *The Wall After Us,* among other things, in her essay, "Spectatorship After Us: Nathaniel Stern's *Server Farms* for the Future." She engages with techno-futures and waste, affect and matter, perception and care. Writing specifically on the combination of "derelict technologies" and "living vegetation," Kate says that *Server Farms* and *The Wall After Us* "generate embodied, affective encounters in the here-and-now, even as they entertain the possibility of a future with no readers or spectators whatsoever." What she is calling "post-anthropocentric spectatorship" invites us to "inhabit a post-human worldview firsthand." The exhibition does not truly present a world after us, Kate goes on, given how there are human designers, and ongoing care-givers for the life and non-life on view. It rather presents *spectatorship* of our ongoing activities as *itself* "an experiential site of critical contemplation." Here we *look* at the potential of a "looking" that is "after," which also invites us to "look after" the worlds we live in. Whereas Nam June Paik's video sculptures and titles claim "liveness" and objecthood for telecommunications technologies, the exhibition of, and allusions to, waste, *real* life, and time in *TWAU* create a very different conceptual-material frame. They require human care and tending; research and growth; and agency, even within the larger context of *non*-agency, *after us*.

Look.

As I progressed with *Phossils*, I sought out different methods of artificially aging, and then otherwise transforming, electronic waste. Here I reached out to engineers and scientists in disciplines ranging from mechanical to civil engineering, sustainability to geology, who were experimenting with extremely varied techniques, technologies, and hopeful hypotheses: hydrothermal liquefaction and photochemical processes, nanomaterials and/or aqueous phase separations for water purification, bio-energy recovery and re-use, and biodegradable or even compostable plastics and electronics – to name just a few of the activities the researchers I contacted were involved in. One of the most exciting responses I received was from Dr. Johannes Lehmann, a professor of biogeochemistry and soil fertility management at Cornell University.

Johannes specializes in pyrolysis: a thermochemical process where materials see a change in physical phase and chemical composition through the application of high heat in the absence of oxygen. He is one of the top researchers in his field, and he argues that by pyrolyzing certain kinds of bio-waste (for example, inedible restaurant leftovers), we not only sequester carbon (reducing greenhouse gases), but the resultant "biochars" produced can also boost soil fertility: a triple win in terms of impact on environmental pollution, climate change, and crop production. And Johannes is not only a scientist interested in experimentation toward unforeseen outcomes, but also an an avid humanist, and enthusiastic art viewer and collector. He set up a video conference with me within one day of my blind email to him, and we scheduled several sample shipments back and forth between my studio in Milwaukee and his laboratory in upstate New York. A few months later, I planned a very productive visit to a workshop hosted by Johannes in his home city of Ithaca, which included soil scientists and biochar researchers like him, farmers, landscapers, municipal planners, policy makers, food and gardening specialists, and more, all discussing what they can do, together, about New York State's climate goals in the near future. This extremely informative and lively workshop was followed by several days of my own experiments with Johannes's pyrolysis equipment. Over that year and more, we pyrolized various forms of electronic waste while discussing the implications of not only the material results, but our collaboration itself.

Gage calls for what he calls "an aesthetic turn" in the humanities. And for him it would not be "a new theory,

Right: *Deck*, Print, 24 x 36 in

but rather a new intellectual foundation on which new theories for multiple disciplines might be constructed."[16] Here he is following Jacques Rancière, who says that an "aesthetic revolution is not a revolution in the arts. It is a revolution in the distribution of the forms and capacities of experience that this or that social group can share."[17] Such a "revolution" could see, Gage goes on, a "recalibration of our very understanding of the world through an aesthetic lens," where "creative practices are not only suspicious of existing critical theory-based frameworks but also become speculative toward the production of new ones." Here, art and "aesthetics might become the primary discourse for a next generation of social and therefore ecological, spatial, and political engagement."[18]

And why, I continue, stop with the humanities? Where and how might such aesthetic encounters with and around *science and technology* create new theories, new experiments, new projects, research, disciplines, and more?

The next essay, by contemporary art historian Jennifer Johung, begins with such a premise. In "Experiments in Art + Soil: Biochar, Media Technology, and A Collaboration Between Nathaniel Stern and Johannes Lehmann," Jennifer explores Johannes's and my collaboration, the systems of research and funding, the disciplinary territories of art and science, and where and how each might change, together and apart. Jennifer asks, What if scientific experimentation can be viewed as aesthetic practice and/or art as scientific experiment? She gives examples where each of these propositions

[16] Gage, 7.

[17] Jacques Rancière, Axel Honneth, Katia Genel, and Jean-Philippe Deranty. *Recognition or Disagreement: A Critical Encounter on the Politics of Freedom, Equality, and Identity* (Columbia University Press, 2017), 146.

[18] Gage, 6-8.

Left: *Durban Server Farm 17* (detail), Sculpture, 16.5 x 1.5 x 14 in

emphasizes new openings, possibilities, accidents, and wanderings from any planned agenda. After all, some of the most productive historical findings, from the benzene molecule to penicillin, from surrealism to abstract expressionism, came from dreams or accidents.

Thinking this way is *intimate* for Johannes and me, in our lab and studio respectively. It resituates pyrolysis as an art practice and speculates on my own art practices as scientifically working toward sustainable alternatives to human-made waste. But it is also *systemic* for our disciplines. It wonders around, and proposes different potentials for, what is "viable" and "useful" in our fields more generally. Here, Jennifer argues, "functionality" is not exclusively tied to biological or technological usefulness, but rather points toward modes of material exchange across the arts and sciences that have the potential to initiate new cross-disciplinary forms of biological, technological, and ecological questioning.

Intimate, and systemic.

I also approached my long-time friend and colleague at UWM, Kennan Ferguson, to write a piece. As a political theorist, he was less interested in unpacking any given artworks in depth, but rather wanted to put political theory in *conversation* with *The World After Us*.

In "Afterlives," Kennan argues that the artificial and bogus promise of the digital, above all, remains the escape from the material realm. Digitalia promises to overcome the limits of the human brain, the restrictions of geographic space, the boundaries of temporal degradation and age. Kennan describes how the material preconditions of the digital world anchor digital ideology – the dream of spacelessness and timelessness – in the transformational world of matter and growth. Supersessionist idealizations include the Computational Singularity, where humanity can finally overcome its embodiment and consequently its mortality, or frictionless travel, where ideas and concepts encounter one another free of the limits of pragmatism, pluralism, and politics. But each is built on the delusion of absolute decompression: the expansion of a conceptual and rational realm disconnected from matter. In contrast, this essay argues, the physical stuff upon which the digital world relies – the hardware, the meatspace, the wiring – exist in a world of potential and actual compression, subject to change, growth, and decay.

And that very materiality brings the essays to both this book's initial and final counterpoints. Media art theorist Edward Shanken neither puts my exhibition in conversation with his field, nor writes about a series of works – comparing them and my practice to other historical figures and movements. He writes a short poem, on only one piece and what it is and does. Eddie and I have known each other from the electronic art conference and festival "scene" for more than a decade. When he saw *Sporadical* on my Instagram feed, he offered a trade: the print for his creative piece on the inside cover, "Sporadical Fallout."

And in another move of mutual respect, writer and designer Coe Douglas (who asked for a *Phonēy Print*) marries pataphysics with Solarpunk (two terms I only first heard from him) in this catalog's closing text. "What's After the After? Nathaniel Stern's Patatopian Visual Poetics" explores what he calls "imaginal implication," and my art practice as – his new term – "patatopian." Look for and produce, he implores us, what *might be* beyond...

The World After Us.

As I write these words, I'm about two and half months away from the premiere of *The World After Us* at MoWA | DTN – the Museum of Wisconsin Art's downtown space, in the St Kate Arts Hotel. My studio is in full production mode: prepping shelves and cleats, plants and e-waste and more for *The Wall*; welding modular pieces for the towers; growing house plants and succulents in and around electronics; blending and beating phones; writing essays; designing the catalog; shooting a documentary and recording an audio tour; reaching out to other potential exhibition spaces…

And we are also beginning to see a pile of our own "useless" electronics. Any contemporary artist can tell you that their work always involves idiosyncratic skill sets. For example, I know way more than I'd like to about desktop scanners, marine-rated waterproofing for custom imaging equipment, *Wikipedia* rules for entry, and science project-esque tornado machines, because of recent art projects (to name just a few). Now, my team and I know which phones are the easiest to crush, or blend, or turn into ink; which laptops hold up when one-inch holes are drilled through their center; which motherboards have the least capacitors and resistors we found we had to remove before CNC routing them (Computer Numerical Control for drilling, cutting, and carving). Oddly, the "difficult to trash" devices (at least in how we display them) are *our* trash: the "useless of the useless." We are throwing away what someone else *already* threw away.

But we want to do it differently.

And in this, we are learning. We now have *intimate* knowledge of the local ways and means for handling electronic waste, as well as an understanding of the systems that govern them, where they work, and what might change. I encourage readers to do a little research on the e-waste opportunities local to you, where possibilities may range from things like, for example, UWM's Office of Sustainability (and their Surplus office) – who find University faculty and staff reuse for computers, perform local sales, and/or strip for materials

Right: *Dell in Bloom* (detail), Sculpture, 13 x 20 x 12.5 in, and Print, 8 x 10 in

and parts (or may give unwanted electronics to a wacky professor making art with it) – to NGOs like Digital Bridge in Milwaukee – who partner with other non-profits and non-governmental organizations throughout the world to provide affordable technology to low-income households, set up computer labs for the communities that need them, and plan technological futures, all with refurbished equipment.

More importantly, we all need to engage with the *systems* of care in our much broader communities. As Lepawski points out, while the question "What is the right thing to do with electronic waste?" continues to gain traction with individuals on a personal level, we need to think much bigger, politically. We need to work together on, for example, "decriminalizing export for reuse, repair, and elective upgrade; facilitating ethical trade in electronics reuse, repair, refurbishment, and recycling; implementing genuine extended producer responsibility, which would force brand makers to internalize the costs of externalities and waste management; and democratizing industry by instituting robust forms of public oversight over how much and what kinds of wastes can be produced at all."[19] If, as Klein points out, climate change is a capitalism problem, why not implement capitalist solutions? The Green New Deal aims to address climate change and economic equality with the broad development of well-paid and government-funded green jobs. And the Great Transition movement envisions new development paradigms for a socially equitable, culturally enriched, and ecologically resilient *planetary* civilization – rather than with a nation-based outlook.

Some of the questions these propagators ask include: Why not regulate electronics manufacturers' mining and production and recycling practices the same way the FDA regulates food and drugs? Can we offset both carbon and waste in this way? Like Roosevelt's New Deal, let's bring in taxes from polluters, and use that money for clean-up jobs. Bigger and whackier: while Elon Musk wants us to populate Mars in the far future, perhaps an easier and nearer term option would be to dig for and source materials from there (and other planetary bodies), by extension making the Earth more sustainably habitable? Drill, baby, drill: but do it on another planet. How might we politically and financially facilitate more scientific experimentation, aesthetic argumentation, and multi- and cross-disciplinary research between art, science, geology, and more, leading to such suggestions? Aesthetic Activism begetting Aesthetic Activism. And back and forth and again. This thought-space is where things like compostable phones or biochar utilization emerge, where the useless becomes utilitarian, and imagination becomes viable, desirable, and feasible research.

[19] Lepawsky, 113.

Yes, recycle better.

But we must also:

Be reborn in Cupertino and beyond, like Edward Shanken.

Rethink the geological and technological – setting human relations into play with planetary life – a la Amanda Boetzkes.

Tend to and care for a post-anthropocentric spectatorship, both for and *not* for us, per Kate Mondloch.

Seek out questions, scientific experiments, aesthetic explorations, and political figurings, as Jennifer Johung implores us to do.

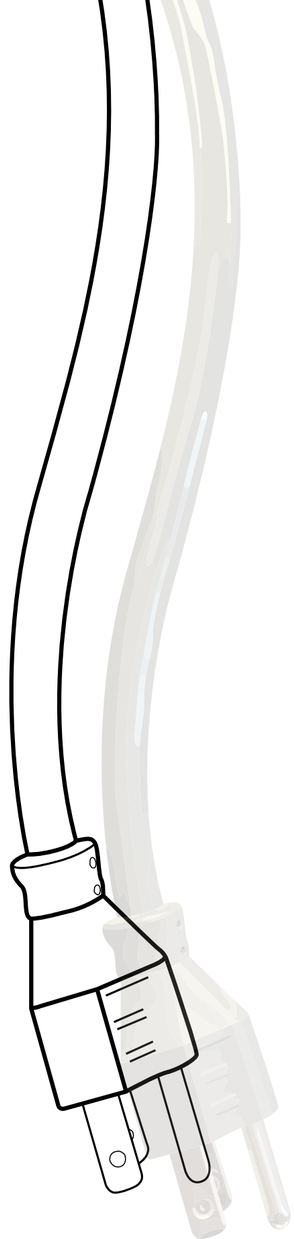
Abandon the promises of the digital for a more ecological understanding of compression, change, growth, and decay, as Kennan Ferguson urges us to.

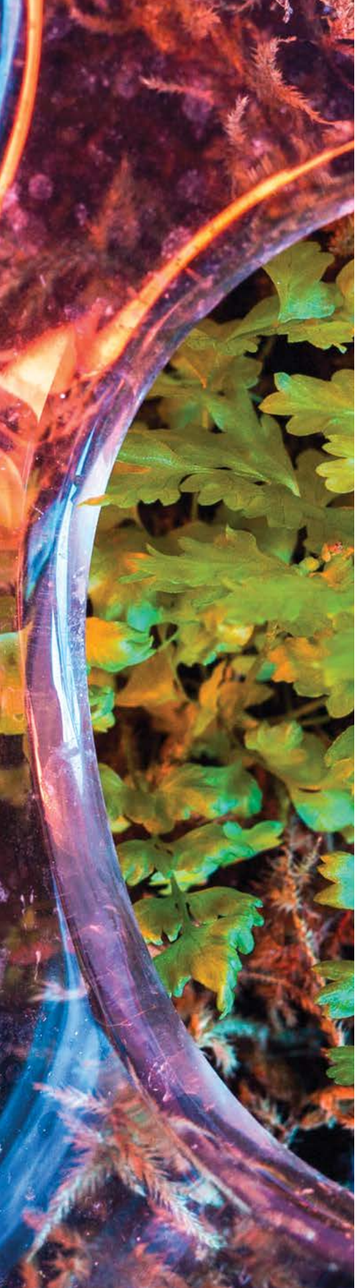
And, most simply, *look*. Look carefully, like Coe Douglas does. Look, think, and act.

Resituate, speculate, wonder, and propose.

Just think about the relationships and environments we'd have if we thought more about the relationships and environments we have.

Previous Spread: *Mactus Pro*, Sculpture, 18.5 x 15 x 20 in
Next Spread: *Crossroads*, Print, 24 x 16 in





Technophilia Entre-Nous

Amanda Boetzkes

Slavoj Zizek argues that "'The world without us'…is fantasy at its purest: witnessing the earth itself retaining its pre-castrated state of innocence, before we humans spoiled it with our hubris."[1] But what kind of fantasy is "the world after us"; a world that emerges after its presumed despoliation at the hands of humans? Where the former fantasy occludes human subjectivity in order to experience nature in a virginal state and without guilt and responsibility for always already having defiled and destroyed it, the latter proposes an alternative resolution to the "eternal adversaries" of Eros and Thanatos at play in the ways we imagine the futurity of the earth.[2]

Nathaniel Stern's *The World After Us* works through the dilemmas of the geological future with an insistence on preserving the human touch. This touch, however, is heterogeneous, invested with both technophilia and biophilia in equal measure. Stern's practice brings our proclivity for the mass production of media technologies into confrontation with its earthly impact. *The World After Us* is not a lifeless post-apocalyptic landscape. To the contrary, this futurity discloses an insistence on *handling* our technophilia in concert with posthistoric nature. Media devices have been crushed, pulverized, dissolved and otherwise submitted to corrosive forces in a speculative studio-laboratory. But even as they have been corroded, they give rise to proliferations of plant life that charge the images with pleasurably intimate affects. Stern's work therefore invites us to imagine the world in which technologies and biotic life appear and express to one another in the afterlife of *us*. But what does this relationship tell us about the absent *us* that generated it?

[1] Slavoj Zizek, *Censorship Today: Violence, or Ecology as a New Opium for the Masses*, 2007. http://www.lacan.com/zizecology1.html. Accessed December 2, 2019.

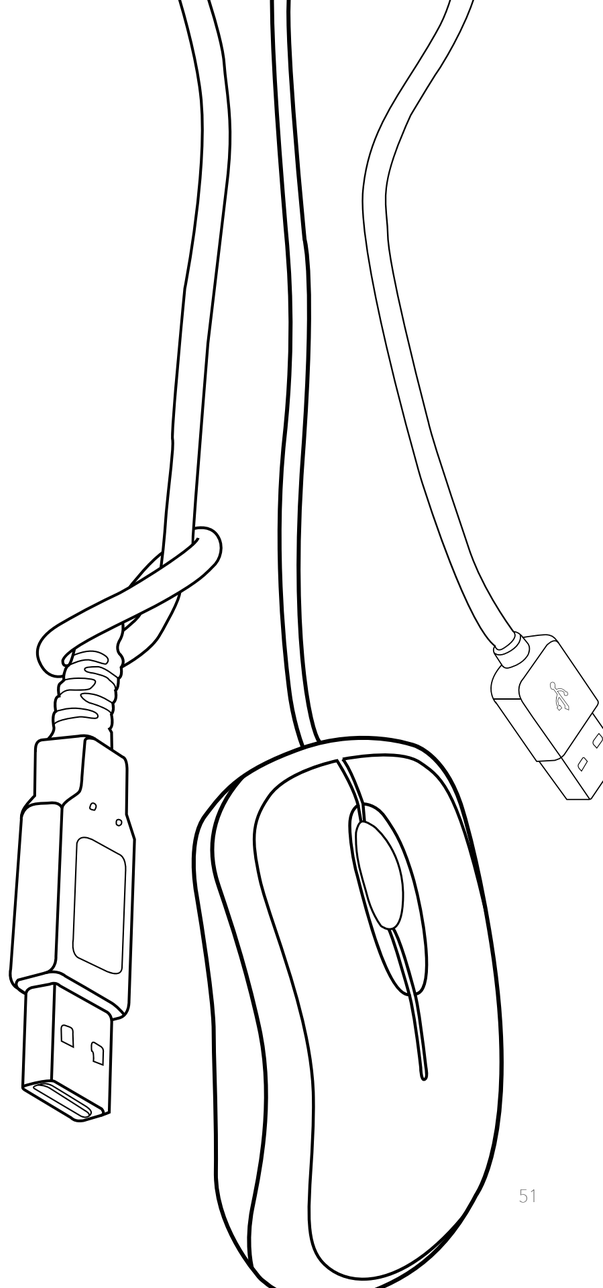
[2] Joseph Dodds, "The ecology of phantasy: ecopsychoanalysis and the three ecologies," in Mary Jayne Rust and Nick Totton (eds), *Vital Signs: Psychological Responses to Ecological Crisis* (London: Karnac Books, 2012): 121.

Previous and Left: *Speak Easy,* Documentation

After Human History: The Archaeomodern Perspective

The imaginary of the Anthropocene has raised an acute consciousness of the human impact on all domains of biological life. These destructive patterns have not only led to mass extinctions, but have sedimented in the geological strata of the planet. But while from the geological perspective, the destructive effects of human activity are incontrovertible, the causes, accountability, and responsible action for this condition remain in a grey zone of analysis. As Zoe Todd and Jason Moore readily argue in their respective critiques, the concept of the Anthropocene does not account for the specific history of colonization and its corresponding drive for a global economy based on an unmitigated resource grab.[3] Yet, the environmental symptoms of the Anthropocene can be tied directly to the era and modus operandi of Europeans of the age of the Industrial Revolution. Thus, while it seems as though a response from all humans is demanded, there are deeply hierarchical structures at work in the cultural imaginary of the history and futurity of the Anthropocene. Responsibility and responsiveness to the demise of planetary ecologies falls to an as-yet irresponsible regime of power. Further, the onus to dismantle this *dispositif* is thwarted by the inertia of the global economy, occluded by world governments, and otherwise falls on no one in particular but everyone in general.

[3] See Zoe Todd, "Indigenizing the Anthropocene" in *Art and The Anthropocene*, eds. Davis and Turpin (London: Open Humanities Press, 2015), 241-254; and Jason Moore, *Capitalism in the Web of Life: Ecology and the Accumulation of Capital* (New York: Verso, 2015).



Such a stalemate condition has led to a deep scepticism of global capitalism and the narrative of technological progress that underpins it. It is in this vein that Walter Benjamin endeavoured to study the phantasmagoria of capitalism from its scenes of ruination: the streets and arcades of early 20th-century Paris animated with the characters that haunted the liminal times and spaces of the urban environment, like ragpickers, child laborers, and prostitutes. This perspective yielded an alternative analysis of social relations, its affects, and the materialist connections and disconnections that bound together the modernist fabric. In effect, Benjamin turned modernism inside out, reading history in its material degradation rather than in its temporal progression. Jacques Rancière aptly describes this dialectical inversion as an *archaeomodern* turn.[4] The debris of civilization exposes alternative histories, particularly those histories of the labor energies and the lives of subalterns that have been buried from conscious visibility and subsumed by the veneer of the commodity.

To see the world from an archaeomodern perspective is to read civilization from the perspective of its discontents. These repressed contents of the contemporary world are not merely a troubled social world divided into labor classes, though this remains a standing condition of globalization. But more aptly, an archaeology of the contemporary era reveals the channels of resource extraction and earthly exploitation that are integral components of the paradigm of human exploitation. At this crucial juncture of climate crisis, our ruins confront us with our reliance on the related concepts of "Cheap Nature" and "Cheap Labor" that form the basis of capitalist surplus value.[5] At the same time the

[4] Jacques Rancière, "The Archaeomodern Turn," in *Walter Benjamin and the Demands of History*, ed. Michael P. Steinberg (Ithaca: Cornell University Press, 1996), 24-40.

[5] Jason Moore, "The Capitalocene Part I: On the nature and origins of our ecological crisis," *The Journal of Peasant Studies* 44.3 (2017): 593-630.

Left: *Phossils* (various), Sculptures, sizes vary

sobering reality of climate change propels us into states of mind in which we must imagine ourselves beyond the fundamental antagonism of human history versus natural history. Indeed the ways we conceptualize history itself have come to an end, and with that comes the theorization of the end of the human. As Dipesh Chakrabarty argues, with the realization that humans have become geological agents in a historically unprecedented way, the dichotomy of human history and natural history that has animated modern political theory has simply collapsed.[6] Since the Industrial Revolution, humans have been intently working towards the theorization and actualization of freedom, yet until climate change, there was simply no consciousness of the fact that this freedom was being acquired in and through the acquisition of geological agency: human history and geological time remained unrelated.[7] Now, however, we are at a juncture where human history does not simply end at the edge of planetary chaos. Rather, we are charged with the task of rethinking the geological agency of humans and accordingly with rewriting our histories of social and political order.

Broken Tools and Other Phoney Geological Agents

The archaeomodern perspective is newly charged by the planetary catastrophe of climate change. Whereas in the modern political tradition, the task at hand was to excavate the buried histories of the oppressed that perturb narratives of evolution and progress, today, it is the very material of burial itself that perturbs us. The earth itself is *informed* with synthetic materials and industrial debris that signal the human penetration of the geological, and equally, the intrusion of the planetary into the fundamental concepts that differentiate the

[6] Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* 35.2 (2009): 208.

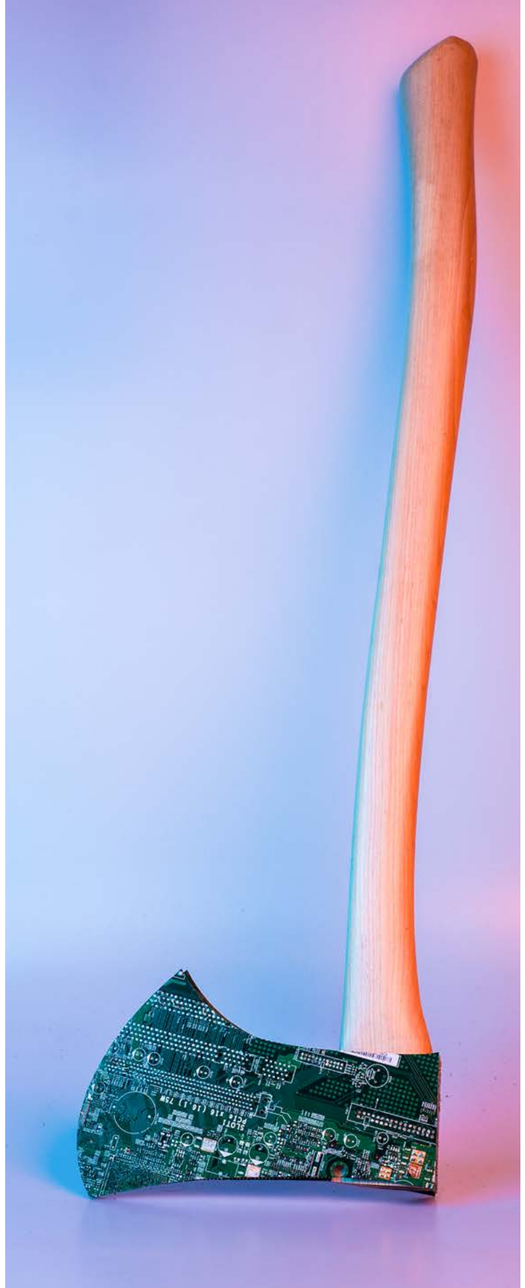
[7] Ibid.

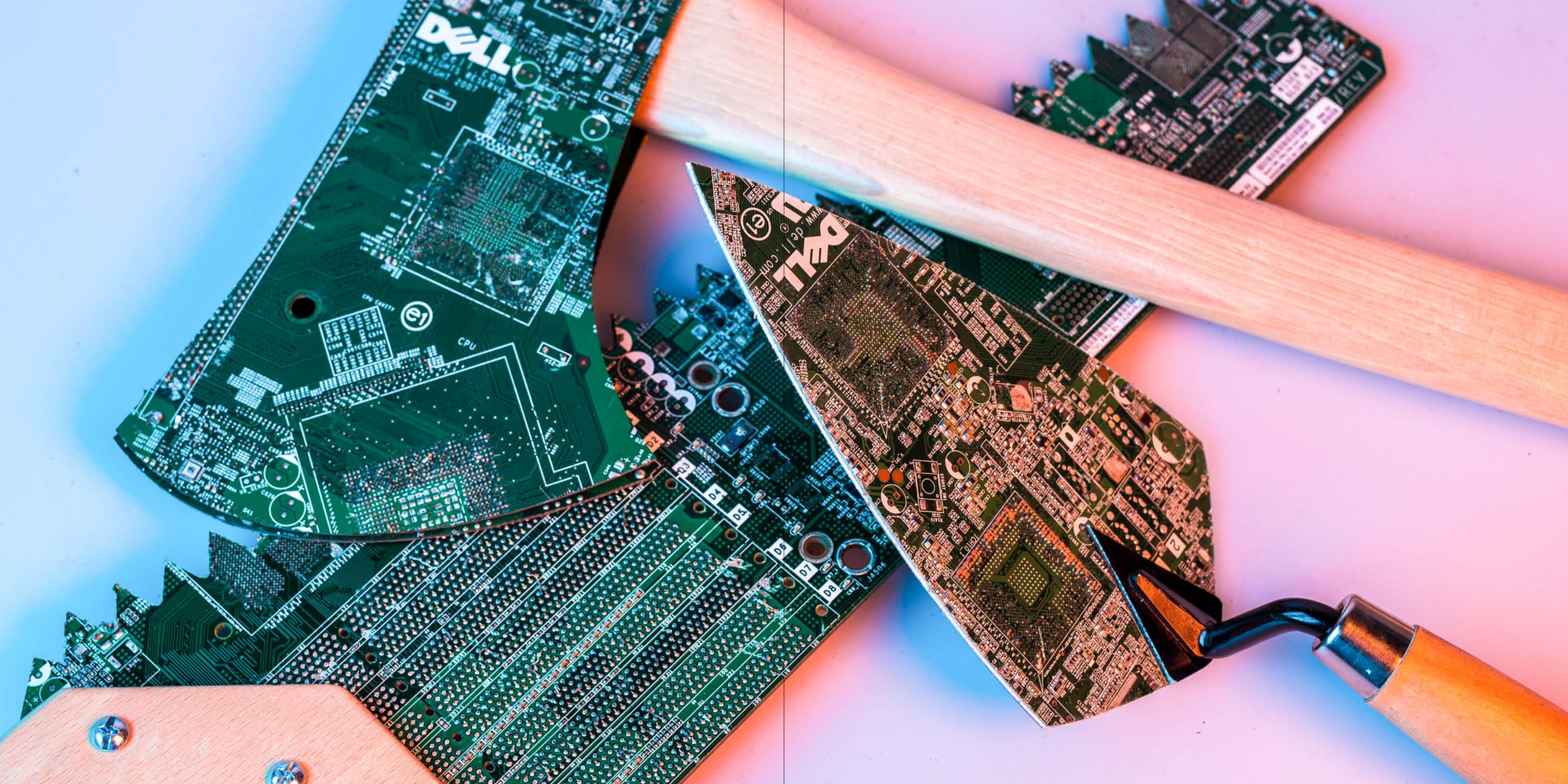
Right: *Applecations*, Sculptures, sizes vary (to scale with originals)

Above: *Wrench* (an *Applecation*), Sculpture, 3 x 16.5 x 1 in
Right: *Axe* (a *Circuitous Tool*), Sculpture, 8 x 27 x 1 in
Next Spread: *Circuitous Tools*, Sculptures, sizes vary (to scale with originals)

human from nature. It is with this in mind that we can see how *The World After Us* is tasked with a critical archaeological process, but one that is not simply historical in nature. Rather it sets human relations into play with planetary life, invoking all the perturbations, expressions, and gestations of this agonistic exchange. Nathaniel Stern does not simply excavate buried human histories, but rather undertakes an operation of imagining a geological future as a way of reconsidering human history in its convergence with the planetary. He therefore operationalizes the archaeomodern perspective, turning it into an aesthetic procedure by which to move forward and backward in time within the same image, and in this temporal bifurcation, to visualize the geological agency of the human, and imagine an anthropogenic geological reality after human history.

Consider Stern's grouping *Circuitous Tools and Applecations*, a set of tools – hammer, screwdriver, wrench, trowel, saw, and axe – recast from Dell circuit boards and melted aluminum iMacs. The futurity of the tools, their appearance as objects that have weathered the passage of time, is implied by the signs of force exerted against them. The surface of *Hammer*, for example, is pitted and striated, its head dented from its sculptural mould. As Stern points out, after having been melted and extracted from computers, the aluminum of the *Applecations* leaves the tools too soft for actual use. Yet in their state of disuse, the objects come forward in newly realized visual terms. They have been submitted to a speculative, aesthetic procedure that is neither purely natural nor exclusively human. In other words, the way of imagining the human's geological agency, and the geological force applying itself to humanity, occurs through an imaginative operation of projecting objects into the future and rendering their deformation into uselessness while nonetheless visualizing them as aesthetically charged things. As the title *Circuitous Tools* suggests, the artistic process entails a circuitry of projecting the object forward as a functional tool and




DELL
CPU
SATA
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then looping backward as purposeless object; into a geological future that exceeds our species and back into the human world for reflective consideration. This imagined temporal loop by which the tool is submitted to geological forces, is the condition for visualizing its ontogenetic transformation into an object that reconciles natural and human history.

In the 56th Venice Biennale (2015), renowned curator Okwui Enwezor threaded a concern for what I have called the "archaemodern tool" into his exhibition rhetoric.[8] The thematic program of the exhibition "All the World's Futures" dealt with ways of imagining the future of peoples and the planet, and how such speculation takes place in utopian and dystopian modes. The aesthetic positioning of broken and discarded hand tools held a strong presence: for example, sculptures from Melvin Edwards' *Lynch Fragments* series composed of welded shovels, pitchforks, hooks, and chains inferred the history of slavery and the suppressed energies of African American slaves; Herman de Vries' installation in the Dutch pavilion included a taxonomy of sickles; Monica Bonvicini's *Latent Combustion*, a set of hanging sculptures made of chainsaws and leather, invoked the force of supressed libidinal energies; and Xu Bing's installation, *Phoenix*, was a colossal Chinese dragon made of the construction debris produced as the city of Beijing prepared for the 2008 Olympics (hard hats, steel beams, chains, saws). Elsewhere I argue that Enwezor's aesthetic program situates the era of manual labor along with its troubled history of exploitation and slavery into the bedrock of the earth in such a way that tools appear as petrified artefacts of another age.[9] The thematic of the archaeomodern tool uncovers a dialectic between a utopian and dystopian future, in which labor history has been committed to the earth, left buried for the rest of human history, yet recovered as a dormant force that haunts the broken tool. The generosity of this dialectic lies in the possible uses that lie dormant in the objects. In their dysfunction, they can never again be used within the same exploitative apparatus, yet they nevertheless exert themselves, inviting the viewer to imagine the uses they might proffer in an alternative world. In this way, natural history and human history are bound together in a hypothetical future perspective that invites us to imagine the potentials of these objects and the future people who might use them.

What are the possible circuitries and "Applecations" retrieved from the detritus of media giants such as Microsoft, Google, Amazon, and of course, Apple Inc.? It is no secret that a media archaeology would discover toxic metals and chemical compounds in the remains of our computers, devices, screens, network cables, and appliances. And this is to say nothing of the dangerous labor conditions of intensive mining for rare earth metals at stake in the production of our communications tech. To pursue a politicized media archaeology would inevitably lead to the exposure of what Rob Nixon calls the "slow violence" on which the global media network relies.[10] Slow violence is the silent manoeuvring by which multinational corporations of the Northern hemisphere condemn environments and impoverished laborers of the global South to a common exploitation, where land is seized, and its people forced into the labor of resource extraction, leaving both with the consequences of ecological contamination that appear only after the damage has been done.

[8] Amanda Boetzkes, "The Political Energies of the Archaeomodern Tool," *Materialism and the Critique of Energy*. Eds. Brent Bellamy and Jeff Diamanti (Chicago: MCM' Publishing, 2018), 443-470.

[9] Ibid.

Left: *Ring Ring*, Sculpture, 5 x 15 x 6 in, and Print, 24 x 36 in

[10] Rob Nixon, *Slow Violence and the Environmentalism of the Poor*, (Cambridge: Harvard University Press, 2011).


FAUXNE
INK

Previous Spread and Right: *Phonēy Prints,*
Prints, 12 x 12 in each (unframed)

Such a sordid underbelly of media technologies is difficult to reconcile with the extravagant potentials for relating, socializing, sensing, and experiencing the world that our devices promise. Yet, it is precisely this world of human communication that Stern attempts to evacuate from the mise-en-scène of the tool-object. On the one hand, *The World After Us* is endowed with a Pop appeal. The works are playfully titled, with puns and clever allusions to the kinds of transformations that the objects have undergone as they have passed from the world with us to the one in which they have been overtaken by other geological agents: *Ring Ring* for the telephone that springs up green ferns; *Aloe World* [Hello world!] for the aloe plant that grows out of a Dell desktop case; *Photosynthesis* for the plant that grows out of a Pansonic digital camera. Many of them are set in ambient pink or ultraviolet lighting, which enfolds the objects in a curious warmth – like the cocoon of a tanning bed, perhaps. Yet as much as the titles and atmosphere set a flirtatious tone, the mise-en-scène is an empty laboratory and invites a forensic examination of the objects. The *Phonēy Prints* work through connotations of phone, faux/fauxne, phoney, while they lay out a taxonomy of phones from the rotary, and the original brick cell phone, to the Blackberry and the iPhone.

Above: *Rotary* (a *Phonēy Print*), Print, 12 x 12 in
Right: *Aloe World* (detail), Sculpture, 32 x 16 x 24 in

Yet for all this ludic spirit, and the comic rendering of phone silhouettes in a style that is deeply reminiscent of Andy Warhol, the *Phonēy Prints* were made out of a "faux" ink, devised in Stern's studio by pulverizing phones and mixing it with extender. Crushed pieces of the devices still rest on the surface of the prints. Their glittery appearance subtly captures the dilemma of Stern's practice, which situates the human ("us") at the crossroads between the utopia of media communication and the dystopia of the apparatus of resource extraction from which the technologies are derived. Like the glitter of Warhol's *Diamond Dust Shoes*, Stern's *Phonēy Prints* tell their dark story precisely in the discrepancy between the exhilarated affects and the unsettling inhumanness at play in their outward appearance.

Famously, Fredric Jameson describes Warhol's *Diamond Dust Shoes* in this vein, as the postmodern overcoming


Panasonic
DMC-LZ7
LUMIX

of the modernist dialectic between interior (subjective) spaces and the exterior (other) world. Affect *wanes* as the modern subject gives way to the collapse of history into shallow and fragmented postmodern spaces. It is left as a free-floating overlay on the image. Emotion and subjectivity have been absorbed leaving only, "a strange compensatory decorative exhilaration, explicitly designated by the title itself."[11] For Jameson, the diamond dust of Warhol's shoes *looks back* as a new formation of the return of the repressed. For while the diamond dust is decorative it is nonetheless implicitly tied to the commodity fetishism of late capitalism and its procedure of evacuating all discernable ties to the labor energies, lives, and substructures that uphold production. Yet, he reads Warhol's use of the photographic negative in *Diamond Dust Shoes* and his *Death and Disasters* series as having a mortifying effect on the reified eye of the viewer. The "glacéd X-ray elegance" of the image is stripped of a connection to death anxiety on the level of subject matter. It nevertheless reveals a "black-and-white substratum of the world of appearance." Death, he continues, "…is not a matter of content any longer but of some more fundamental mutation… in the object world itself…" as it becomes a set of texts or simulacra.[12] The end of history absorbs death itself, and relocates it to the surface of the image as a layer of shattered material that glints arbitrarily in the light.

Technophilia, In Between and After Us (Entre Nous)

If Warhol's work signalled a mutation of the object world by which the commodity expanded and took over history and space altogether, then we might consider how *The World After Us* drives this mutation to the point of an ontogenesis between human history and the geological, as the very extension of the simulacral world of the commodity into earthly matter. As ecopsychoanalyst Joseph Dodds argues, the era of climate change signals a fundamental crisis in the theorization of the subject, for it requires thinking ourselves through complex, nonlinear, interlocking systems. For example, he argues that the two opposing human drives, Eros and Thanatos, are now unlikely partners, conspiring to produce the auto-destruction of the human. The fact that we are confronting the sixth mass extinction signals the work of Thanatos, both in its generalized destructive force (for example, in the form of active warfare) and in its tendency to drive toward non-existence and auto-annihilation. Yet, Eros does not serve as a countervailing force anymore; the erotic embrace of "nature" has produced overpopulation and overconsumption. Human biophilia has turned on itself, and we must now reconcile ourselves to the end of nature, and depart from the fantasy that nature is a state of "pre-castrated innocence" that humans spoil with our hubris.[13] For it is precisely that paradigm by which we fantasize the world *without* us, and imagine the earth vengefully "punishing" us for our hubris as its anarchical forces overtake the planet and return it to a purportedly natural state.

Alexis Rockman's apocalyptic landscape painting *Disney World* (pictured in the previous spread) perfectly exemplifies this fantasy. Here, the famous *Spaceship Earth* globe at Epcot Center in Disney World sits in ruins in a foggy swamp, its spherical armature long since blown apart. Unruly vegetation thrives in the mire. In the foreground a giant dragonfly alights on a lotus bloom, while soft, willowy mosses grow from dead tree trunks and leafless branches. A European Wild Boar mounts a Nutria, from South America, an unholy cross-species coupling that summarizes the great relish of this fantasy: the triumph of nature's heterogeneity over the simulacral space of Disney World. It is worth noting that *Spaceship Earth* is a ride that simulates travel backward in time across the history of human technologies. But in Rockman's painting, this simulation has broken out of the enclosed dome, and the narrative of technological history, told as a journey back in time, has gone haywire. The ride has turned inside out and now the simulated return to origins inside the spaceship ride has become the planetary future in which human technologies have been neutralized and destroyed by a chaotic and arbitrary nature. The painting therefore dramatizes media archaeology as a form of wish fulfilment for a return to a prehistoric state of disorder.

The World After Us is different yet again. For in many ways, the fantasy of Rockman's painting is bound up in a circular logic in which the fantasy of a world without us tempts us to tame, civilize, and reorder the world once again. On the one hand, Rockman's scene gives us recourse to nature to bring us back to balance, a wilderness from which we might tender new life. On the other, even this scene of apocalypse is replete with natural growth that cannot uphold the totalizing reality of climate change and mass extinctions as a world without life; it's simply a world without *us*. But Stern's images have broken with the cyclical returns to nature. Instead of fulfilling our biophilia, "nature" is set against our technophilia. Plants struggle with the recalcitrance of devices in a quasi-communication with them. Further, Stern establishes this struggle by exerting technokinetic energies against the very devices that signal the human territorialisation of the planet with the spread of an anthropogenic communication network. His studio-lab practice, after all, is to vigorously destroy the devices, break them down, study them in their obstinate and particulate forms and make them host to living growth.

In this way, Stern sets the energies of Thanatos against our technophilia, and against the devices themselves, directing our autodestructive force toward them in order to replicate their biodegradation as though on behalf of nature.

Though nature has been demystified, a new hybrid sphere of existence nevertheless springs up from the wreckage of human technophilia. In Stern's animate scenes, plants and objects are interwoven in a new network of relations. The residual free-floating affects of human communication return here to parlay the interactions between life and non-life. The devices that existed as a companion species to us in the human world have found new companions in ferns, mosses, fungi, and grasses. The circuit boards tranformed into tools register exactly the incommunicability of humans; they do not transmit messages between humans anymore. Instead they are "retooled" as aesthetic surfaces. But it is between the surfaces of these tools, devices, appliances, and plant life that a new *geosociality* emerges. Humans have not so much annihilated themselves with our destructive drive, then. Rather, planetary life has intruded in the midst of us, in the spaces between the thick mesh of our noisy, polluting, exploitative networks. It is here, in the wellspring of growth *entre nous*,[14] that new intimacies emerge in an alien time and place, where human myths of nature have been dispelled, our drives burnt out, and our environmental impact rendered meaningless.

[11] Fredric Jameson, *Postmodernism, or The Cultural Logic of Late Capitalism* (Durham: Duke University Press, 1991), 59-60.

[12] Ibid, 60.

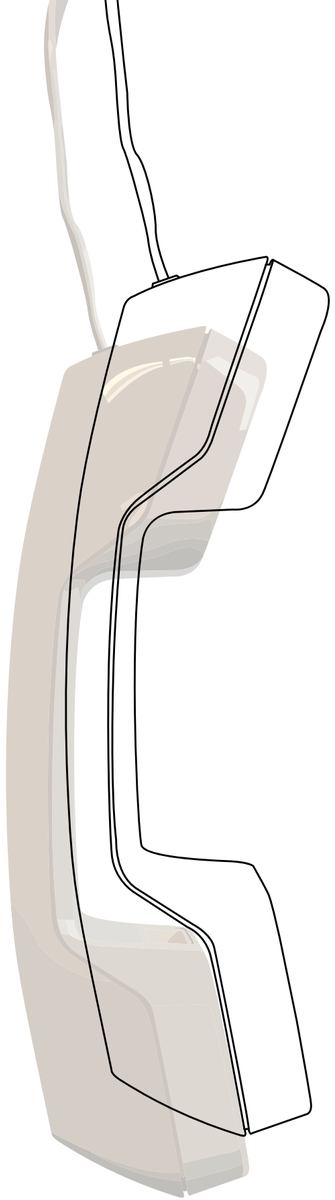
Previous Left: Alexis Rockman, *Disney World*, 2005, Oil on Wood, 84 x 72 in

Previous Right: *Photosynthesis*, Print, 10 x 16 in

Next Spread: *Please Hold*, Print, 24 x 16 in

[13] Dodds, 121.

[14] I take this phrasing from Emmanuel Levinas's *Entre Nous: Essays On Thinking The Other* (New York: Columbia University Press, 2000). Levinas's influential theorization of ethics maintains the ontological difference of the Other, which means that ethics is always situated in a gap between "us."

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Spectatorship After Us: Nathaniel Stern's Server Farms for the Future

Kate Mondloch

Tangled roots sprout through the grid-like façade of a beige touchtone phone. A wheat grass mohawk peeks out between white headphones, where, despite the fact that the headset stands upright and at the ready, it remains unclear exactly who is wearing whom. A black loudspeaker sports a tall flowering succulent, as if a stodgy monument and its surrounding landscape decided to swap roles, just for fun. A pair of gutted hard drives re-fitted with dirt and tiny plants recline atop a pedestal, a greenery-infused office phone dangling perilously off the side, suspended only by a black pigtail cord. Laptops replete with potting soil suggest that Intel is no longer inside, despite the obstinate mirrored sticker's promise. Computer cases brim with tiny green fronds sprinkled with brightly-colored wires now liberated from their previous roles, free to explore the world in coquettish clusters. Fans sprouting ferns – or perhaps ferns sprouting fans – convene patiently in orderly rows. An ivory Princess telephone with gold trim rests serenely against a translucent speaker-cum-terrarium, as if receiving or providing some futuristic form of life support.

These are just a few of the unlikely objects that make up Nathaniel Stern's *Server Farms* series (2018-present) – a wide-ranging collection of digital prints, outdoor sculptures, and gallery installations that combine derelict technologies with living vegetation. As the exhibition title, "The World After Us," suggests, the works invite us to ponder and inhabit a universe without "us" at the center. Stern's title is an homage to Alan Weisman's influential non-fiction book, *The World Without Us* (2007). Weisman's tome offers a speculative account of what would happen to the built and natural environment should humans simply vanish. In Weisman's words: "How would the rest of nature respond if it were suddenly relieved of the relentless pressure we heap on it and our fellow organisms? How soon would, or could, the climate return to where it was before we fired up all our engines?"[1] Both artist and author investigate the ecological and aesthetic implications of plants making due – or, perhaps more to the point, making *better* – without us. Insofar as we're still around to read Weisman's book or enjoy Stern's works of art, however, a seeming paradox structures both thinkers' projects: their works generate embodied, affective encounters in the here-and-now, even as they entertain the possibility of a future with no readers or spectators whatsoever.

[1] Weisman, *The World Without Us* (St. Martin's Thomas Dunne Books, 2007), 4.

Previous and Left: *Fan Girls*, Sculpture, 14 x 10 x 5 in, and Print, 24 x 16 in
Below: *Double Ring*, Sculpture, 18 x 8 x 8 in

This incongruous experience, what I'll refer to as a post-anthropocentric spectatorship, is especially poignant in Stern's work.

This is because, rather than working primarily with words, Stern's artistic explorations work *with* materials and *through* bodies. In this way, the *Server Farms* allow spectators to experience the unthinkable: to inhabit a post-human worldview firsthand.

Stern's most large-scale work, *The Wall After Us* (hereafter referred to as *The Wall*), sets the tone for his distinctive take on a post-"us" world. *The Wall* is a bricolage of individual *Server Farms* and other abandoned technological objects. Dozens of cast-off media devices – cell phones, keyboards, laptops, cassettes, headphones, servers, speakers, routers, and so on – are affixed to the

gallery wall, some mounted directly to the surface, others perched on small shelves or stacked as towers. Unfussy, small green plants peek out of many of the has-been devices. The majority of *The Wall's* devices are strung together in an improbably lyrical web of ethernet cables, cassette tape, USB cords, and phone lines, joined at points by intrepid creeping vines. Other items appear to be literally and metaphorically untethered. The grid-like formation of plant-riddled objects suggests a sort of columbarium, in which wild plants doggedly reclaim their space in aging memorial walls. Once they mattered so much.

Now they are only matter.

If *The Wall's* seeming disarray might initially conjure thoughts of a Best Buy or media museum ravaged by a hurricane, more attentive observation reveals that these objects were purposefully mounted and artfully arranged into a thoughtful assemblage of interesting forms, complementary colors, and carefully-placed plants. This is part of *The Wall's* allure: it simultaneously evokes thoughtless heaps of outdoor electronic trash *and* feats of painstaking techno-natural curation, from NASA's meticulous techno-plant experiments to the "living walls" popular in industrial chic construction projects. Sited within the institutional context of the visual arts, however, *The Wall* is also reminiscent of the work of nouveau realistes such as Daniel Spoerri or Arman. Like Spoerri – whose "snare pictures" fasten a group of objects, such as dinner party leftovers, including the plates, silverware, glasses, and table, for vertical display on a wall – or Arman – whose *poubelle* series takes everyday waste and enshrines it as sculpture in a translucent box – *The Wall After Us* trains our attention on the everyday material objects that tend to be ignored outside of an art exhibition context.

Previous Spread: *Beats*, Sculpture, 16 x 16 x 16 in, and Print, 24 x 16 in
Left: *The Wall After Us* (detail), Installation, size variable
Right: *Resonant*, Print, 14 x 35 in

Stern's clever mash-ups of recycled media objects and living materials, as well as his interest in working in series, makes a comparison with the witty media art practice of Korean-American artist Nam June Paik (1932-2006) almost inevitable. Paik's *TV Garde*n (1974), in which thirty television sets (each playing the artist's *Global Groove* video) are partially obscured by a makeshift garden of live potted plants, is perhaps the most obvious precedent for *Server Farms*. Other useful examples for considering Stern's nature-culture hybrids include *Fish TV* (1975), where twenty-four fish tanks with live fish are placed in front of twenty-four televisions showing a series of moving images of loosely related content (including the occasional video fish), and the installations *Real Plant, Live Plant* (1978) and *Real Fish, Live Fish* (1982), both of which re-deploy television casings as containers for living flowers (*Real Plant, Live Plant*) or fish (*Real Fish, Live Fish*), while also incorporating real-time video feedback into the mix.[2] Instead of affirming outdated dualisms between "nature/organic" and "technology/synthetic," both Paik and Stern emphasize their inter-relatedness: TVs and fish, seedlings and telephones, share each other's space, engaging in ostensibly symbiotic relationships.

The art exhibition context is instrumental for both artists because it allows them to bring the sculptural qualities of everyday media technologies to the foreground. An outdated TV or laptop placed in an art gallery, for example, invites us to consider the object's formal properties that may otherwise be overlooked in favor of the technology's normative function as a screen-based window onto another world. Our everyday media habits and expectations are not checked at the gallery door, however. We don't see *TV Garden's* flock of televisions or *The Wall's* phones, speakers, and cassettes *exclusively* as sculptural forms, but, rather, we see and experience them through the additional lens of our "everyday" media habits. Because the artists' chosen objects – from Paik's hollowed-out TVs and radios, to Stern's dead cell phones and servers – don't function the way we expect them to in everyday life, it prompts us to experience these objects in new ways.[3]

The differences between the two artists' approaches are equally revelatory, however. Indeed, comparing Paik's production in the 1970s-80s with Stern's early twenty-first century work allows us to appreciate the key concerns of both generations in new ways. Paik's video sculptures created in the 1970s reveal a deep investment in examining the relationship between realities and their technologically-mediated representations: videos of flowers juxtaposed with live flowers, viewers face-to-face with their video images. Unlike Stern's work, Paik's TV / living matter hybrid sculptures still offered sites for viewing functional media images, however unusual or obscured. We are still treated to operational moving images in *Real Plant, Live Plant,* for example, albeit presented on a tiny video monitor within a hollow TV casing, and not, as one might expect, on the TV screen itself. This difference has important implications for understanding the artists' respective models of spectatorship. For Paik, as for many artists working with media technologies in the 1970s, the then novel technology of video was primarily of interest as a moving

[2] For an overview of Paik's work, see John G. Hanhardt, *The Worlds of Nam June Paik*, exh. cat. (New York: Solomon R. Guggenheim Museum, 2000).

[3] For a critical history of this art and media history, see Kate Mondloch, *Screens: Viewing Media Installation Art* (University of Minnesota Press, 2010).

Previous Spread: *Windows*, Sculpture, 14 x 8 x 12 in, and Print (detail), 16 x 24 in

Right: *Farm in the Dell*, Sculpture, 20 x 10 x 13 in

image medium, especially because of its capacity to capture images in real-time.[4] Paik's many celebrated single-channel video works (such as *Global Groove*), as well as his use of closed-circuit video to create elaborate puns between "live" video and "live" plants/fish, are representative of this trend.

In contrast to Paik's (semi)-working technology, the technological objects used for *Server Farms* make no overtures toward their intended original uses. Screens are lifeless or shattered. Disemboweled monitors and deactivated motherboards lie in heaps on the floor. The fact that the discarded media no longer operate in the ways we expect them to is important to the overall effect of their ironic dual address – both *about* and *without* us. As if to underline this post-anthropocentric lack of functionality, *unplugged* plugs are prominently displayed. In short, nothing works "for us," as it should. Experiencing the *Server Farms* is uncanny in part because, even though we recognize that these technological objects are no longer functional "for us," it is equally apparent that they're perfectly functional as plant habitats. Forty years after Paik, the *objecthood* of electronic technology has overtaken the novelty of the technological object's medium specificity and representational capacities. In *Server Farms*, we can appreciate that the animating inquiry for media artists like Stern has shifted from deconstructing video's claims to "liveness," to the agency/activity and objecthood of the inert technology itself. That this transition occurred concomitantly with the massive increase of consumer-generated e-waste in recent decades, as well as an increasing public awareness

[4] On the history of video art, see Douglas Hall and Sally Jo Fifer, eds., *Illuminating Video: An Essential Guide to Video Art* (Aperture / Bay Area Video Coalition, 2005), Michael Rush, *Video Art* (Thames and Hudson, 2003). For concerns particular to abstract video, see Gabrielle Jennings, ed., *Abstract Video: The Moving Image in Contemporary Art* (University of California Press, 2015).

Left: *The Wall After Us* (detail), Installation, size variable

of the geopolitical and socioeconomic ramifications of dealing with it, is no coincidence. Stern's decision to identify the objects as "e-waste" (as opposed to "black casing / box," "aluminum frame," "translucent cube," etc.) strongly hints at how the artist expects us to understand these objects' status. The fact that Paik's countless media installations created in the 1970s-80s are not described as "e-waste," even though many of them were fashioned from outdated and recycled media objects, further supports this period-specific interpretation.

Liveliness, instead of liveness, is the principal concern of *Server Farms*.

These unruly organic and inorganic objects thereby necessitate new critical models that can grapple with a posthumanist conception of matter as lively or exhibiting agency as it intersects with the material realities of everyday life. New materialist philosophies developed by Jane Bennett, Karen Barad, and Donna Haraway, among others, are especially well-suited to the task.[5] As Diana Coole and Samantha Frost put it in the introduction to *New Materialisms*, "materiality is always something more than 'mere' matter: an excess, force, vitality, relationality, or difference that renders matter active, self-creative, productive, unpredictable." They go on to explain how many new materialist philosophers, much like Stern, "discern emergent, generative powers (or agentic capacities) even within inorganic matter, and … generally eschew the distinction between organic and inorganic, or animate and inanimate, at the ontological level."[6]

[5] These three authors are especially adept at merging concerns of new materialisms, feminist theory, and critiques of technoculture. For an introduction to the work of these new materialist scholars and likeminded others, see Diana Coole and Samantha Frost, eds., *New Materialisms: Ontology, Agency, and Politics* (Duke, 2010).

[6] Coole and Frost, eds., *New Materialisms*, 9.

Writers associated with the material and speculative realist turns are of interest in considering Stern's work for two primary reasons: first, they attempt to understand spheres of experience, including bodily experience, which fall outside of the dominant paradigm of representation, in which knowledge is understood to be a mirror of nature. This is helpful because it offers a productive way to appreciate the "without us" complexity introduced by Weisman, but with a twist exclusive to Stern. Stern's work does not merely *represent* "spectatorship after us." Instead, "The World After Us" *presents* "spectatorship after us" itself as an experiential site of critical contemplation.

Second, these materialist theories are helpful for thinking about what I identify to be a post-anthropocentric spectatorship in Stern's work because they, too, entertain the possibility of interactions and encounters not necessarily limited to *human* sensibility. Bennett's *Vibrant Matter*, for example, interrogates the ethical-political dimensions of affect not limited to human bodies. Blending a Spinozist notion of affect with materialism, Bennett's book, in her words, focuses "less on the enhancement to human relational capacities resulting from affective catalysts and more on the catalyst itself as it exists in nonhuman bodies."[7] Following Bennett, Stern's ecological and aesthetic practice is concerned with paying attention not only to what such catalysts do, but also to what they want. For Stern, the aspiration is that this particular mode of new materialist practice will lead to an "exponentially increased responsibility on our part, an ongoing and active encounter with the intimate interrelations between matter and potential, life and movement."[8]

[7] Jane Bennett, *Vibrant Matter* (Duke, 2010), xii.

[8] Stern, *Ecological Aesthetics: artful tactics for humans, nature, and politics* (University Press of New England, 2018), 10.

Next Spread, Left: Durban Server Farms Workshop, Documentation

Next Spread, Right: *Fan Girls* (detail), Sculpture, 14 x 10 x 5 in

The "after us" in Stern's exhibition title, then, is best understood as an evocative *double-entendre*. The *Server Farms* show what life might look like after we're gone (a la Weisman), yet, and at the same time, the curated e-waste and thriving indoor plants expose an evidently human designer and care-giver. Put differently, Stern's stylish planters – made by or "after" human desires – nevertheless allude to a post-apocalyptic world – a world "after" humans. *Server Farms* captures a transitional moment in artistic experience: its particular genre of post-anthropocentric spectatorship is directed toward an audience both human *and* nonhuman or more-than-human. Art and artistic experience can offer us opportunities to inhabit these otherwise challenging post-anthropocentric perspectives informed by new materialisms.[9] Stern endorses this position in his own writing; he proposes: "Geological time and Earth size, decomposition and regrowth: these are concepts we can only somewhat comprehend rationally, and they are impossible to truly fathom. I propose that we can *feel* such things, aesthetically and thus ethically, if we substantiate future potential, artfully, in objects and installations, images and speculative forms."[10] From the point of view of spectatorship, this is transformative:

We *experience* the lure and the mocking of Stern's grassy keyboards; and we *feel* the punch-in-the-gut ethical imperative of minding our electronic trash.

[9] I have written extensively about this dynamic elsewhere. See Mondloch, *A Capsule Aesthetic: Feminist Materialisms and New Media Art* (University of Minnesota, 2018). See also this author's "Unbecoming Human (A Capsule Aesthetic)," *New Criticals* (December 2017). http://www.newcriticals.com/unbecoming-human-a-capsule-aesthetic. Accessed August 10, 2019

[10] Stern, in UWM Office of Research grant application, 2018.

Left: *Snow Crash*, Print, 16 x 10 inches

Like his new materialist theorist peers, Stern is concerned not only with the activity of the (human) spectator, but also with the activity of nonhuman forms and processes of matter. While *Server Farms* may hint at a time when no living human spectators are left, this doesn't imply *no* (nonhuman, more-than-human) viewers whatsoever. Put differently, the work is *available* for human viewers, but not necessarily *contingent* upon them. Ontologically-speaking, the *Server Farms* just *are*. Stern probes precisely this condition with his series of outdoor experiments, in which retired media technologies are abandoned to the elements, nestled in fallen leaves or encased in snow, like so much roadside debris. Even more than their indoor cousins, the outdoor *Server Farms* beg the question: how long will the differences between the inorganic and organic remain recognizable? Given centuries of outdoor exposure, might the acorn-like speaker eventually…sprout? And, should that happen, who, among "us," might be there to see it?

Both Weisman and Stern imagine plants merging and mingling with all categories of matter, inhabiting all sorts of places they wouldn't normally belong – whether taking root in building ventilation systems or blooming inside laptops and phones. In *The World Without Us*, Weisman goes so far as to ask, "Is it possible that, instead of heaving a huge biological sigh of relief, the world without us would miss us?"[11] While Weisman leaves the topic undeveloped, *Server Farms*, instead, invites us to entertain this audaciously anthropocentric inquiry. If the plants in Weisman's imaginary post-human world simply do their own thing, Stern's plants, significantly, require human care and tending. *Server Farms*, after all, must be trained to thrive in the otherwise inhospitable conditions of an indoor exhibition space, without the benefit of natural daylight and water. At the same time, and despite the similarity to Bonsai in scale, these plantings don't appear to be especially precious or well-groomed – they clearly are not "for us" in the same way.

Stern, together with his studio assistants, describes how the team manages the plants' needs and life cycles. "The studio has large bay windows that give sun. We have a tending and watering schedule. We re-plant the dead [plants] but we don't do any real pruning and just let them grow wild or as they want." Asked whether this process is altered when the work is relocated inside different exhibition spaces, Stern observes that local care-takers as well as site-specific equipment (LED sun lights, for example) will likely be required to ensure the plants can thrive in each new venue. Stern's *Server Farms* require care and good-humored curatorial collaboration akin to arte povera artist Giovanni Anselmo's *Senza titolo* (*Scultura che mangia*) (1968). In Anselmo's sculpture, two blocks of granite are loosely bound with twine, held taut by a fresh head of lettuce. As the lettuce rots, museum staff must be vigilant to replace it, or the work will collapse. Once again, the art of a previous generation enriches how we understand the present. At the time of its creation, *Senza titolo* was understood in relationship to process art and the possibilities of "poor" (non-arty) materials. In today's terms, we might also notice the ways in which both lettuce and granite have vibrancy and act upon the world without or after us. Taking a cue from Stern's *Server Farms*, we may also ask about Anselmo's high-maintenance lettuce blocks:

Who, exactly, is tending whom?

Back to *The Wall*. The deliberately arranged vertical display compels one to come face-to-face with the accumulation of objects that might otherwise be dismissed as a familiar e-waste trash heap or a facile reclamation project. Viewing *The Wall* can feel strangely personal, even to the extent of assuming an ethical-political urgency. None of the technology here is valuable today. These lightly-used objects have become "waste" in

[11] Weisman, *The World After Us*, 5.

Right: *Wrong Number*, Print, 16 x 24 in

Next Spread: *Acorn*, Documentation

favor of increasingly frequent upgrades. This is a familiar story, almost dismissible as a *Wall-E* morality tale. But confronted with *The Wall's* insistent materiality, I suddenly realize I've owned and/or interacted with versions of each of these devices. Although they hail from noticeably different technological eras, they all have seen their rise and fall within the span of my middle-aged lifetime. (Notably, Stern and I are approximately the same age.) *The Wall* is both an elegy to planned obsolescence, and a neglected or repressed part of my own life story. Why aren't we still using these? Could I really have generated so much trash?

If one looks long enough, it's possible to identify a personal connection to each item comprising *The Wall*. Strangely, it takes concentrated effort to remember when the touchtone phone appeared – did it debut when I was an adolescent? Or was it always already around? What happened to all of my landline phones? My electronic alarm clocks and calculators? How much e-waste have I personally generated? The recently-upgraded iPhone on my desk has an answer: "Imagine a 176-pound (80 kilogram) pile of discarded products with a battery or plug in your living room. That's how much e-waste the average American household of four throws out every year."[12]

Oh God. Where is all of it?

Clearly this is a question one can only ask from a privileged first world perspective. I know others are living with my/our waste already. A quick search on my phone brings up an appalling headline: "e-waste tagged for recycling ends up in developing world." An accompanying image of my hometown of Seattle draws me in. I click. "Dead electronics make up the world's fastest-growing source of waste. The United States produces more e-waste than any country in the world. Electronics contain toxic materials like lead and mercury, which can harm the environment and people. Americans send about 50,000 dump trucks worth of electronics to recyclers each year. But a two-year investigation by the Basel Action Network, a Seattle-based e-waste watchdog group, concluded that sometimes businesses are exporting electronics rather than recycling them."[13] I can't help but think all this googling and statistics-referencing is precisely Stern's intention. After all, Stern knows better than most that 21st-century art spectatorship is now inevitably informed by our everyday attention, distraction, and sharing across various media screens.[14]

What are we to do with this, if not necessarily *new*, maybe newly *personalized* or *embodied*, information?

Perhaps unsurprisingly, the artist's position on the role of human agency vis-à-vis the rest of the material world, including its e-waste, is unresolved. "I'd like this work to be hopeful, yet also encourage accountability," states Stern. "Political discussions are so difficult to have right now…for some reason we [Americans] agree on so much and yet seem to do nothing with those common goals." "Can we make a little more care, a little more tending?," he muses, before granting that "I'm not naïve and [know that] the earth will eventually freeze, one way or another."[15] Despite the artist's measured uncertainty, the *Server Farms* themselves suggest that Stern wants

[12] Stephen Leahy, "Each U.S. Family Trashes 400 iPhones' Worth of E-Waste a Year," *National Geographic*, December 2017 https://news.nationalgeographic.com/2017/12/e-waste-monitor-report-glut/. Accessed August 9, 2019

Left: *Indigenous Server Farm (Durban)*, Site-Specific Installation, 6 x 6 x 8 ft

[13] Katie Campbell and Ken Christensen, "Where does America's e-waste end up? GPS tracker tells all," *PBS News Hour* (originally published in Earthfix) https://www.pbs.org/newshour/science/america-e-waste-gps-tracker-tells-all-earthfix. Accessed August 8, 2019

[14] See, for example, Stern's *Interactive Art and Embodiment: The Implicit Body as Performance* (Gylphi Limited, 2013).

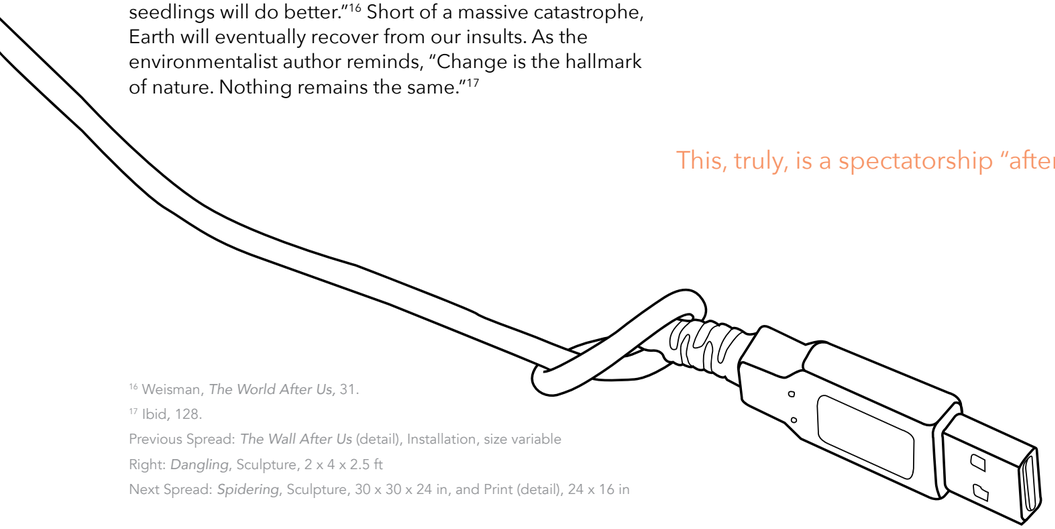
[15] Interview with the artist, 13 December 2018.

us to keep at least some our e-waste close, embedding these would-be talismans in our art galleries, and even our living rooms. The workshops Stern held in Durban, South Africa, in which the artist invited participants to create their own *Server Farms* made from local e-waste and indigenous plants, and encouraged participants to take the completed techno-planters home (which, according to Stern, most did), would seem to support this interpretation.

"We" may have set these techno-organic crossbreeds into motion, but – spoiler alert – the plants and the outdoors will outlast us all. Weisman's *The World Without Us* details a plant-led breakdown and eventual decomposition timeline for everything, including plastics and other e-waste: "Over centuries, vegetation will take up decreasing levels of heavy metals, and will recycle, redeposit, and dilute them further. As plants die, decay, and lay down more soil cover, the industrial toxins will be buried deeper, and each succeeding crop of native seedlings will do better."[16] Short of a massive catastrophe, Earth will eventually recover from our insults. As the environmentalist author reminds, "Change is the hallmark of nature. Nothing remains the same."[17]

Weisman's speculations, significantly, are based on our utter absence. Stern's position on humanity's future is more equivocal. The artist invites us to experience his techno-natural *Server Farms* and to think with him toward an indeterminate future, and through a transitional spectatorship, both with *and* without us. The *Server Farms* enact what the world might look like without us at the center, but, crucially, this doesn't mean giving up on contemporary political conditions. The perhaps inconvenient truth embedded in Stern's practice is that ethical-political subjectivity still matters; we still bear responsibility for our electronic waste, even if we ourselves may be on the way out. "The World After Us" points the way to a viable contemporary eco-politics – an attempt at balancing the big picture of geological time with the pressing ecological and geopolitical concerns that characterize our immediate experience. Ultimately, the spectatorship associated with Stern's *Server Farms* proposes a form of agency, even within the larger context of non-agency.

This, truly, is a spectatorship "after" us.



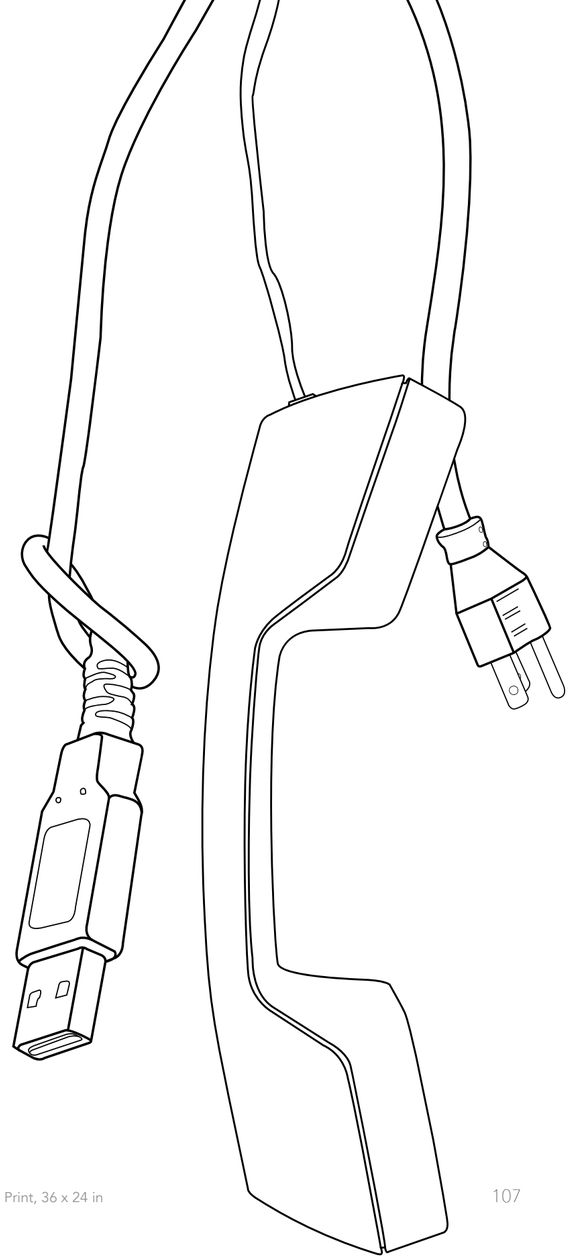
[16] Weisman, *The World After Us*, 31.

[17] Ibid, 128.

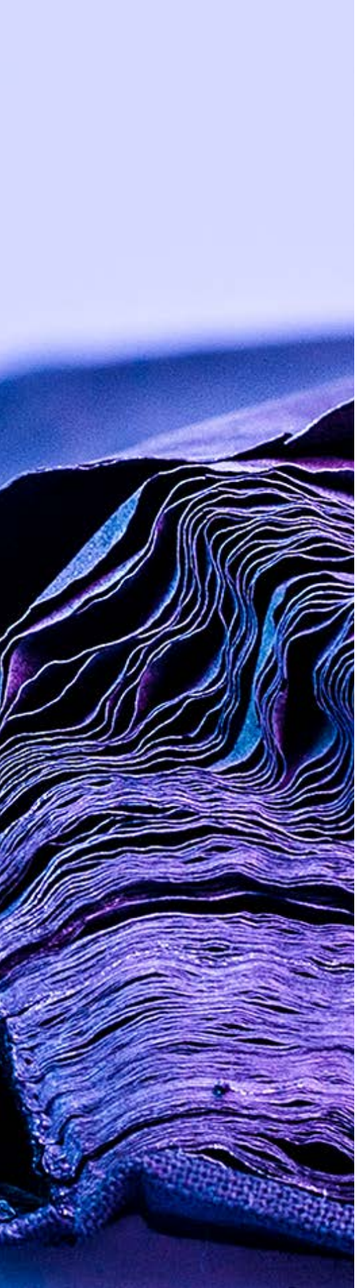
Previous Spread: *The Wall After Us* (detail), Installation, size variable

Right: *Dangling*, Sculpture, 2 x 4 x 2.5 ft

Next Spread: *Spidering*, Sculpture, 30 x 30 x 24 in, and Print (detail), 24 x 16 in



Left: *Sound Waves*, Print, 36 x 24 in



Experiments in Art + Soil: Biochar, Media Technology, and A Collaboration Between Nathaniel Stern and Johannes Lehmann

Jennifer Johung

I. Starting Matters

Floppy disks, CD-ROMs, cassette tapes, computer punch cards, and two types of computer keys all make their way from Nathaniel Stern's art studio in Milwaukee, WI to Johannes Lehmann, a soil scientist at Cornell University's School of Integrative Plant Science. These now mostly obsolete materials and technologies, with even more to come soon, are on an unexpected mission, their eventual and unknown transformation under a variety of high temperatures to occur in Lehmann's pyrolysis kiln. Pyrolysis is a thermochemical process through which typically organic, carbon-based materials are decomposed with the application of heat and in the absence of oxygen.[1] Biochar, a certain kind of bio-waste, is one of the resulting products, and as Lehmann has been noting for a number of years now, can actually boost soil fertility as well as address climate change by sequestering large amounts of carbon in soil. In doing so, Lehmann argues: "Biochar offers the chance to turn bioenergy into a carbon-negative industry."[2]

[1] Although typically carbon-based materials are used in the process of pyrolysis, other materials can and have been pyrolyzed, such as electronics and bones, as well as fossil carbons such as tires and coal. See, for example: https://www.sciencedirect.com/science/article/pii/S0165237008000375, Accessed September 10, 2019.

[2] Johannes Lehmann, "A Handful of Carbon," *Nature* 447 (10 May 2007), 143.

Previous Spread and Left: *Walden*, Sculpture, 12 x 18 x 2 in, and Print, 10 x 8 in

Right: *Blended Phones*, Sculpture, 8 x 8 x 3 in

Over the past year, Stern and Lehmann have been experimenting with pyrolyzing a variety of media objects and technologies, in order to explore what happens to both the form and function of these materials once charred. Their ongoing project asks us to think about what it means, what it will look like and do, or more particularly, what kinds of ecological as well as socio-political impacts will unfold, when media technologies are transformed by way of recent developments in soil science, as techno-matter and bio-matter collide. And by extension, what new proposals will be raised when questions of climate change meet questions of aesthetic experimentation?

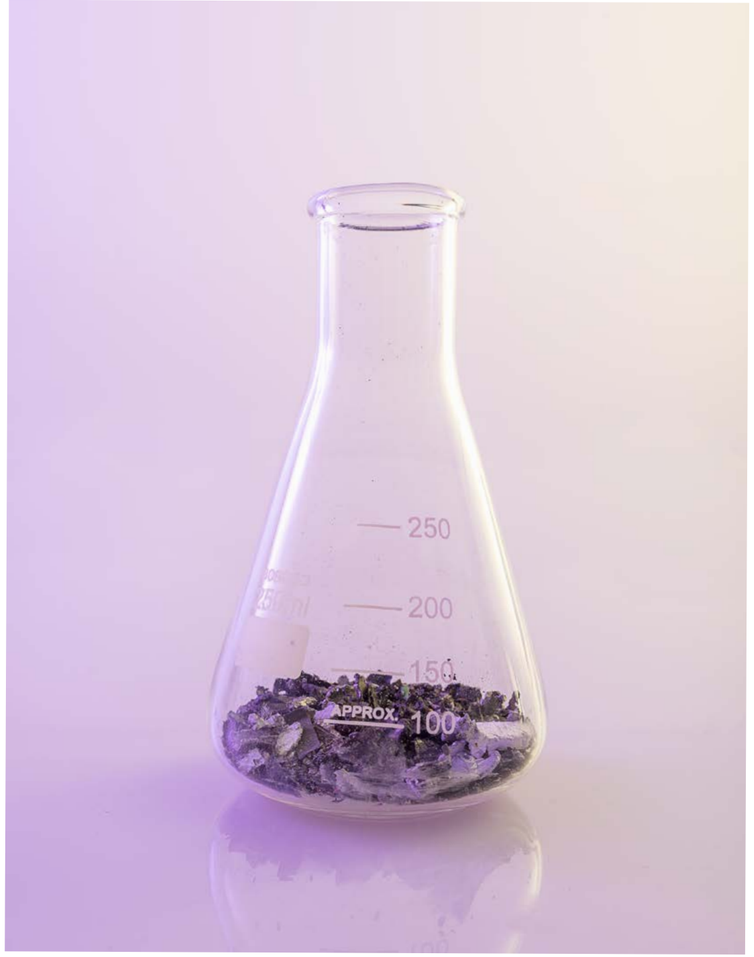
These kinds of queries, and indeed Stern and Lehmann's collaboration, can be framed in terms of earlier trans-disciplinary explorations, namely the groundbreaking Experiments in Art and Technology. Founded in 1966 by Bell Telephone Laboratory engineers Billy Klüver and Fred Waldhauer and artists Robert Rauschenberg and Robert Whitman, E.A.T. connected artists with engineers who together developed installations and performances incorporating new communication and data processing technologies, hardware and software. E.A.T. grew out of an experimental series of events held in October 1966 in New York City, 9 *Evenings: Theatre and Engineering*, that brought together 40 engineers and 10 contemporary artists and subsequently led to the membership based non-profit organization. In just a few years, E.A.T. connected numerous artists, engineers, and scientists across the globe, promoting such collaborations as a way of bolstering art's involvement in burgeoning modes of interaction and relation. Beyond making new technologies accessible to artists, E.A.T. proposed experimental cross-pollination of art, engineering, and science as necessary not only to understanding the shifting social and political impacts of new technological advances but even more importantly to allowing those impacts to be felt, experienced, and questioned by an expanded and growing interconnected public without only serving the end goals of the telecommunications industry.

Focusing on the ongoing process of Stern's and Lehmann's collaboration enables us to rethink the productive use-value in transdisciplinary experimenting towards a reframing of uselessness, in order to emphasize new openings, possibilities, accidents, and wanderings from any planned agenda. While experimentation may have different end-goals and thus take differing pathways within scientific proposals and across aesthetic explorations, Stern and Lehmann's project encourages us to view experimentation as art practice and aesthetics as scientific proposal. In doing so, we are able to expand what we deem purposeful, while proposing pyrolysis as an art practice and Stern's artworks as sustainable alternatives to human-made techno-waste. Stern and Lehmann's conversational exchanges and material interchanges make us rethink what is useful, while highlighting the material function and value of uselessness across both the ecological and technological, as well as scientific and artistic forms of inquiry.

As Stern makes clear in his most recent book, *Ecological Aesthetics*:

> we are at a critical juncture when it comes to exploratory arts research in this vein. Though TEDx (Technology, Entertainment, Design talks), link propagation via Facebook, Instagram, Twitter, and Snapchat (etc.), and crowdfunding, among other things, have brought innovation, entrepreneurship, and creative uses of technology to the forefront of the contemporary public's mind, the arts, as *artists* know them, are mostly given a lot of lip service.

Right: *Flask*, Sculpture, 4 x 6 x 4 in



> What is promoted is often just design or engineering dressed up as something slightly funkier. Value is attributed based on a piece's utility…And in a very real sense, the stakes are higher when art, specifically, is no longer allowed to experiment and explore, to play with visibility and creation, to question and contextualize, to be *useless*, at least in relation to "solutions" or capital, at its outset.[3]

And although the sciences have conventionally proceeded along very goal-oriented pathways, in terms of both hypothesized and anticipated results – both of which are integrally tied to necessary funding – for Lehmann, this does not and should not always need to be the case. In a departure from such conventions and in conversation about this very collaboration, he contends: "If we know where we want to end up *and* how we get there, we are not really chartering new ground."[4] In turn, Stern echoes the same sentiment: "Artists do best when they are allowed to not *know* what they're doing. After all, if we know exactly where we are going to go when we embark on a new journey, and that is precisely and only where we ever go, have we actually gone anywhere?"[5]

II. Into the Kiln

Once in the hands of Akio Enders, a researcher who has been working with Lehmann, the media objects sent over by Stern and studio assistant Reid Finley embark on their own journey of material transformation, the formal and functional results of which are unknown in advance to either art studio or science lab. A Fortran or computer punch card, a 5.25 inch floppy disk case with fibrous liner, a 5.25 inch floppy disk case with magnetic media, a 3.5 inch floppy disk case, a compact disc, and cassette tapes with case materials are each charred at successively higher temperature increments: 300, 400, 500, 600, and 700 degrees Celsius. Months later, when Stern visits Lehmann at Cornell University, he brings with him more materials – a wood keyboard and mouse, an abacus, a book on how to program with those computer punch cards he had previously sent – and begins to

[3] Nathaniel Stern, *Ecological Aesthetics: artful tactics for humans, nature, and Politics* (Hanover, NH: Dartmouth University Press, 2018) 20-21.

[4] Johannes Lehmann, in conversation with Nathaniel Stern and Jennifer Johung, April 2018.

Left: *Cassette* (detail), Print, 10 x 16 in

Below: *CD Samples* (detail), Print, 24 x 16 in

[5] Stern 21.

Next Spread: *Floppy* (detail), Sculpture, 6 x 6 x 1.5 in, and Print, 24 x 16 in

Above: Various Torched Phones, Sculptures, sizes vary

experiment himself with the kiln, altering factors such as the rate of climb to the final temperature, the length of time at that temperature, how much nitrogen to use to deprive the samples of oxygen, and the means used to encase the samples to be placed in the kiln (whether a pan or a metal dish, with glass, or with aluminum foil, for example) – all of which vary how the objects melt, burn, or char. As out-of-date technologies, once but no longer at the cutting-edge or in heavy use, these materials are also quite foreign to the pyrolysis kiln, which typically heats and transforms organic matter or biomass; biochar, one of the by-products of such a process, has been the focus of current research into soil productivity and the reduction of emissions from greenhouse gases.

But biochar also has its own prehistory in the Amazon forest and its river basins, where soil scientists, geographers, archaeologists, and anthropologists alike have for the last decade or so been turning their attention to the rich properties of *terra preta* or the "dark earths."[6] Shown to increase crop productivity, the blackness in certain patches of altered soil has been attributed to human-added char – these bits of charcoal and soot the result of smoldering organic matter. In order to cultivate and farm crops like manioc and peanuts, both Amazonian Indians thousands of years ago and farmers today utilize the soils enriched with this char, which researchers now view as "an essential part of a distinctive agricultural system."[7] There is debate as to whether the addition of char to soil was intentional with the aim of improving farming conditions or whether these soils were depositories for various waste matter.[8] Yet whether

[6] Emma Marris, "Black is the New Green," *Nature* 442 (10 August 2006).
[7] Charles C. Mann, "Ancient Earthmovers of the Amazon," *Science* 321 (29 August 2008) 1152.
[8] For some background on this debate, see: https://link.springer.com/chapter/10.1007/1-4020-2597-1_19; https://exeter.rl.talis.com/items/C32BB7A7-E27E-6526-3012-F85F63F98312.html; https://link.springer.com/chapter/10.1007/1-4020-2597-1_18. All accessed August 5, 2019.

terra preta was purposeful or coincidental, the current-day return to and re-materialization of these enriched soils activates bio-waste as both a system of re-use and renewal, as well as even more potently, a system of mitigating climate change by removing carbon dioxide from the atmosphere and sequestering it in soil.

While the process of charring invokes an expanded temporality, bringing the material Amazonian past into conversation with future global material possibilities, pyrolysis also initiates a transformation of one kind of matter into another, each with varying forces and potentially new and different forms and functions. Lehmann has described the process of charring as moving "organic matter from a rapid biogenic carbon cycle into a much slower geogenic carbon cycle." With a different chemical make-up that mineralizes at a different rate than its previous material instantiations, biochar has a more expansive timescale, so much so that Lehmann would frame its life-cycle in terms of geological time instead of biological time.[9] Along such an extended process beyond us humans, matter is not only active, but also has its own agency, which has conventionally been ascribed exclusively to living humans. In their edited volume on *New Materialisms*, Diana Coole and Samantha Frost argue: "the human species is being relocated within a natural environment whose material forces themselves manifest certain agentic capacities and in which the domain of unintended or unanticipated effects is considerably broadened. Matter is no longer imagined here as a massive, opaque plenitude but is constantly forming and reforming in unexpected ways."[10] Rosi Braidotti, in turn, conceives of this posthuman "intelligent vitality" as a "self-organizing force that is not confined

[9] Johannes Lehmann in conversation with Jennifer Johung, 1 September 2019.
[10] Diana Coole and Samatha Frost, "Introducing the New Materialism," *New Materialisms: Ontology, Agency, and Politics*, ed. Coole and Frost (Durham, NC: Duke University Press, 2010), 10.
Right: *Beaker* (detail), Sculpture, 2 x 4.5 x 2 in, and Print, 10 x 16 in


ANSWER
OUTGOING
USED FEATURE CODES
360 Page
361 Program Keys
313 Program Ring Tone
5 Queue
394 Redial
307 Reminder Message
372 Reverse Transfer
395 Station Speed Dial
317 Station SD Programm
322 System Fwd. On/Off
323 System Speed Dial
324
326 Transfer

within feedback loops internal to the individual human self, but is present in all living matter."[11] Thus, in affirming matter's own vital force whose activity and efficacy exceeds human action and purpose, new materialism intersects with vitalism, confusing precise boundaries and attending to material formations beyond the living altogether.

Political theorist Jane Bennett argues that "vital materialism" seeks "to paint a positive ontology of vibrant matter…to dissipate the onto-theological binaries of life/matter, human/animal, will/determination, and inorganic/organic…to sketch a style of political analysis that can better account for the contributions of nonhuman actants."[12] This new vital materialism initiates a reconsideration of both the status and the relational impact of active material forms and ongoing systems within particular and thriving ecosystems.

As a vital material process, pyrolysis initiates material transformations and exchanges as biomatter becomes biowaste becomes soil fertilizer becomes carbon sequesterer becomes carbon negative industry. As we scale down, too, charred matter transforms unexpectedly; during pyrolysis, carbon is activated in ways that allow microorganisms to more quickly metabolize other carbon, even though the resulting charred matter becomes much harder and slower for those same microorganisms to metabolize.[13]

When applied to media technologies, the process of charring urges us to ask: how can technologies become similarly variously repurposed and reformed, whether usefully or not? Or, put another way, as Stern's now mostly un-used and unusable media objects are transformed in the kiln, how is such techno-matter re-activated? Re-purposing and re-activation need not equal functionality, meaning that the charred remnants of old media need not become newly usable techno- or bio-materials, as is the case with biochar made from biomass. In fact, the agency of such transformed matter lies in its ability to launch questions about the expanded and unforeseen material capacities that could exist beside and beyond our own narrow and predicted intentions, which is something that biochar arguably does as well – with respect to questions of climate change – while increasing soil productivity and storing carbon emissions.

In conversation, Stern and Lehmann both emphasize the necessity to allow for open-ended questioning across both scientific and artistic experimentation:

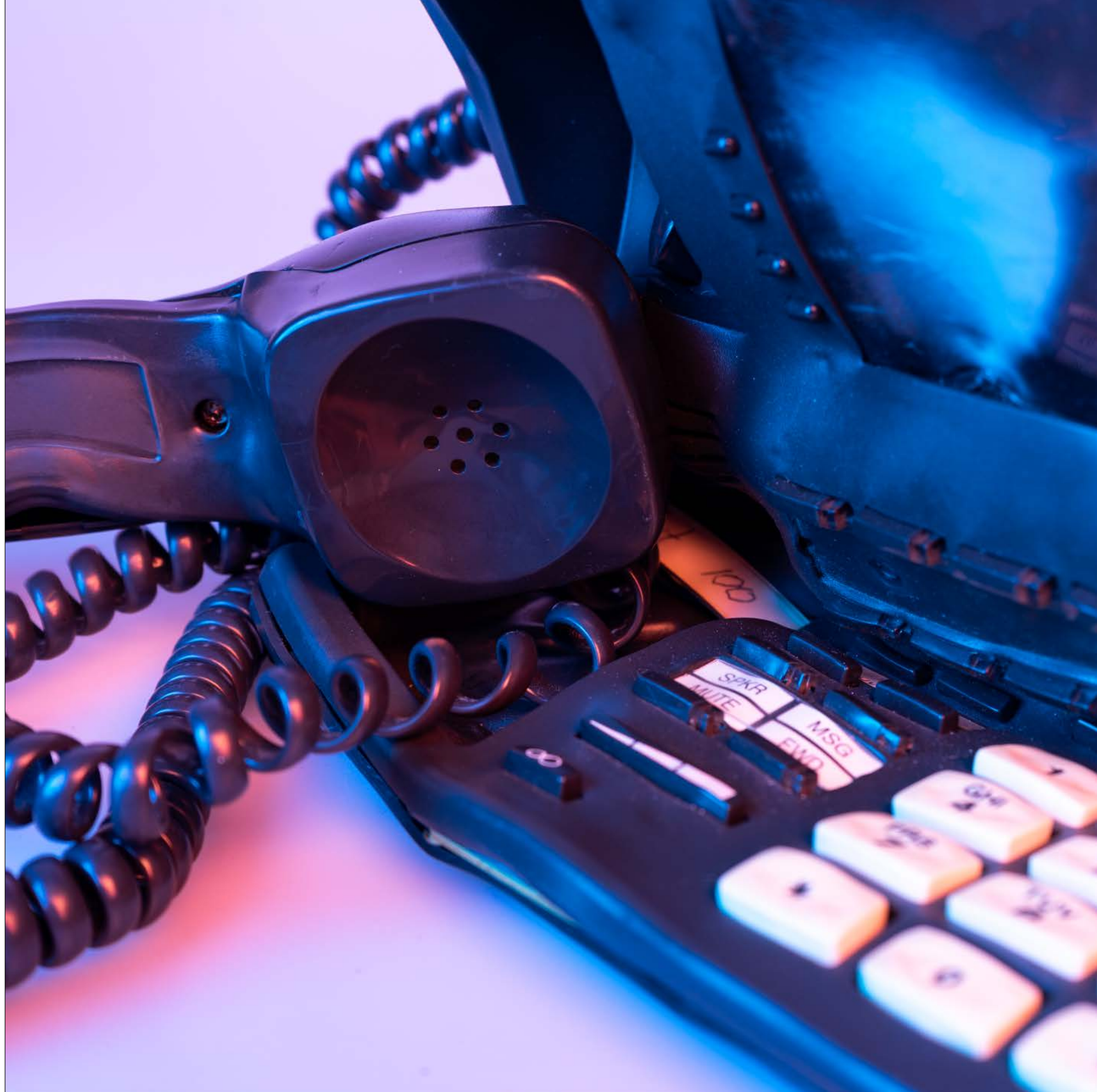
> **Lehmann**: So the hardest part in science, very often, is not coming up with an answer, but coming up with a question. I think that questioning is underestimated. Most people just think it's hard to prove something or disprove something… but I don't think we are focused enough on the question, we're just focused so much on…
>
> **Stern**: The answer.
>
> ***Lehmann***: The answer and the methods of getting the answer.
>
> **Stern**: What I'm hearing is, it's not even just the question; it's the pre-question; it's the opportunity finding. It's the question *formulation*. It's: how do we get there?...I often say "Designers define problems. Engineers solve problems. Artists: we create problems."…And what I mean by that is, we go off the beaten path, we go and find questions

[11] Rosi Braidotti, *The Posthuman* (Cambridge, UK: Polity, 2013), 60.

[12] Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010), x.

[13] Johannes Lehmann in conversation with Jennifer Johung, 1 September 2019

Previous and Right: Soil Science, Sculpture, 14 x 10 x 8 in, and Print, 10 x 8 in



that don't even exist yet, that can't even be articulated *yet*, much less solved.[14]

Beyond what artists and scientists might question, Stern and Lehmann's experiments across art and soil science afford matter itself the capacity to launch questions that cannot be articulated yet, even by those who are initiating the processes of inquiry.

III. Out of the kiln

Charred remnants in vials, a telephone melted whole, burnt book pages, blackened or melted keyboard keys with "clear" and "fn" (function) still legible all make their way back to Stern's studio in yet another step along his and Lehmann's exploratory journey. While process, both in terms of Stern and Lehmann's ongoing collaboration across art and science as well as in terms of the actual material process of charring, has been and continues to be a focal point of their cross-disciplinary experimentation, the material outcome of these newly transformed objects has become just as important visually and conceptually to both artist and scientist.

As Stern notes: "I firmly believe in the process of art, but also in its product… Beautiful things can provoke wonder and call to action. Useless speculations can be beautiful in this way. Scientific experiments, too, successful or otherwise, can do the same."[15] In fact in between compiling the media to send to Lehmann and waiting for the charred objects to return to his studio, Stern was also experimenting with another series of speculative objects that redefine usefulness via material explorations. *Utilities* consists of three bodies of works that developed out of transformed media objects and materials: *Phonēy Prints*, where ink was made from ground up old phones and used to create images of dial and flip phones, a Blackberry, and past and current iPhones; *Circuitous*

[14] Nathaniel Stern and Johannes Lehmann in conversation, Cornell University, July 2019.

Above: *Key*, Sculpture, 1 x 3 x 1 in

Right: *Clear Function*, Sculpture, 5 x 5 x 8 in, and Print, 10 x 8 in

[15] Nathaniel Stern in conversation with Johannes Lehmann and Jennifer Johung, April 2018.

Tools, where a saw, axe, and trowel are made from circuit boards; and *Applecations* in which a hammer, screwdriver, and wrench are all made from melted down aluminum iMacs re-cast in a foundry. While the tools are too soft to actually be used as tools, and the printed ink is just barely visible as crushed phone matter, these objects urge us to start asking ourselves and others: what might become of our old phones and computer parts? Where do the material particularities of obsolete technologies go and what can they do into the future if transformed not necessarily as new technologies but as new materializations that activate discourse and dialogue, utilitarian or otherwise?

In Lehmann's lab, data and information are represented by material objects, which are in turn interchangeable and do not act as ends in and of themselves. He never produces objects, but rather, as he explains, "it's an insight that lives on as a narrative, a conversation, a fact, but never as an object."[16] Yet in collaborating with Stern and his media samplings, matter is data and information, and material objects are propositions, speculations, and questions. Indeed representational distance has been collapsed and in its place, material presentation and performance are activated. The charred matter, some of which is partly haunted by the form of its pre-charred existence, acts as various proposals for future possible functions – functions that are not exclusively tied to the biological or technological usefulness of this newly transformed material, but rather that point towards modes of material exchange across the arts and sciences that have the potential to initiate new cross-disciplinary forms of biological, technological, and ecological questioning. Matter not only transforms as matter, then, but also the ways in which we ask *how* and *why* this material thing has the potential to become and do *what* action along micro to macro-scales.

[16] Nathaniel Stern and Johannes Lehmann in conversation, Cornell University, July 2019.

IV. On Display

Presented in the vials sent from Lehmann's lab, the charred materials perform not only as speculations of what art/science exchanges could be and do, but also as art objects, activated by the framework of the museum display. The placement of objects within a museum setting, as we know from conceptual art and its leveling of institutional critique, frames and values those materials as art. On and as display, these objects ask: what if scientific experimentation can be viewed as aesthetic practice and/or art as scientific experiment? Which is to say, what if this ongoing collaboration expanded art's role within the sciences and/or expanded the capacity of art practice to rethink what is scientifically viable and useful?

Intent on not only matching artists with engineers but also to publicly display their exploratory collaborations to wider audiences, Experiments in Art and Technology brought burgeoning late 20th-century media technologies into conversation with art, installation and performance practices in order to visibly expand access to those technologies beyond the disciplines of engineering and science, and also most significantly to explore how such exchanges could make legible new modes of relation, interaction, and communication between us humans – as well as between us and new and ever-changing forms of data and information. In our 21st century, with many of those technologies now or on the way to becoming obsolete, Stern and Lehmann's experiments across art and soil science re-invoke similar exchanges across disciplinary boundaries, while emphasizing the materiality of those interactions, and re-investing matter – whether media or soil – with the capacity to make visible and legible speculations on how technological and biological thinking might intersect to imagine possible ecological models of problem-finding

Left: *Phossilized*, Sculpture, 2.5 x 5.5 x .25 in

and -solving, as initially instigated by and yet beyond the artist, the scientist, or any of us humans. The fact that soil and its transformations over geological time are the material basis through which both raw materials and media objects are regenerated remains conceptually and materially key to such a collaboration, since soil continues to act simultaneously as an end-point and repository for all manner of biological life forms, but also as the material grounds for renewed life and resources. What we see on display are unusable objects seemingly at the end of their life cycle, their technological livelihood already replaced by newer, faster media, which are then renewed through the charring process as active propositions for future modes of collaboration that, in turn, are capable of not only imagining but enacting a world after us.

V. Into the World, With and After Us

Attesting to the futurity of Stern and Lehmann's own collaboration and the wider impacts and conversations yet to come, the artist and scientist came together at a recent symposium at Cornell University focusing on mitigating climate instability through the thermochemical conversion of waste and biomass. Alongside soil scientists and biochar researchers like Lehmann, farmers, landscapers, municipal planners, policy makers, and food and gardening specialists were together interested in biochar's dual capacity to capture and store carbon from the environment and provide alternative uses for bio-waste, whether heightening soil fertility, re-purposing farm or restaurant waste, or expanding further into new territories through, for example, the development of biochar ink by Thomas Trabold at the Rochester Institute of Technology (which echoes some of Stern's own *Utilities* work). The question of whether biochar and the process of pyrolysis could become a more mainstream and accessible biotechnology hovered across many of the dialogues by participants like Kathleen Draper, the US Director at the Ithaka Institute for Carbon Intelligence, who has been investing in the use of biochar in cement and other building materials, among a variety of other widely usable products.[17]

The various intersections and relations occurring across disciplinary lines as well as material objects, processes, and products points to an underlying argument forwarded by Lehmann, which is, as he says, that "we should not even use the singular for biochar…There are

Previous Spread: *Burner Phone*, Sculpture, 2.5 x 6 x .5 in
Immediately Right: *Mouse Char*, Sculpture, 3 x 4 x 3 in
Far Right: *The Wall After Us* (detail), Installation, size variable

[17] See Kathleen Draper and Albert Bates, *Burn: Using Fire to Cool the Earth* (Chelsea Green Publishing, 2019).

only biochars."[18] Being produced by different kinds of bio-mass, at different temperatures and speeds, allows for a range of resulting chars, each of which could have differing pathways, applications, and impacts in particular sites, climates, and ecosystems. Indeed, biochar itself is a changeable material system as much as it is a changeable material object. As Lehmann argues: "any benefits that the production and use of biochars is able to generate can often be realized only if biochars are perceived as a systems approach."[19] Such a system incorporates and adjusts for variations in bio-mass, the pyrolysis process, and biochar, bioproduct and bioenergy outcomes which may address the broader objectives of soil improvement, climate change mitigation, waste management, and energy generation.[20] As a system, biochar belies dependencies on both human instigation and intervention as well as material specificity and variation, both intentional and unintentional.

Media-char, like biochar, is both variable matter and system, dependent on cycles of techno-matter and techno-waste, led by and continuing after us humans. Unlike biochar, its uselessness as a biological by-product and ecological climate corrector renders its material transformation speculative… for now. Through the process of charring and with the resulting charred matter, Stern and Lehmann's experimental objects are capable of proposing what technological instability might look like when aligned with climate instability, what techno-waste might do when aligned with bio-waste, what media might

[18] Johannes Lehmann, quoted in Rachel Cernansky, "State of the Art Soil," *Nature* 517 (15 January 2015), 258.

[19] Johannes Lehmann and Stephen Joseph, "Biochar for environmental management: An Introduction," *Biochar for Environmental Management*, 6.

[20] Ibid, 7.

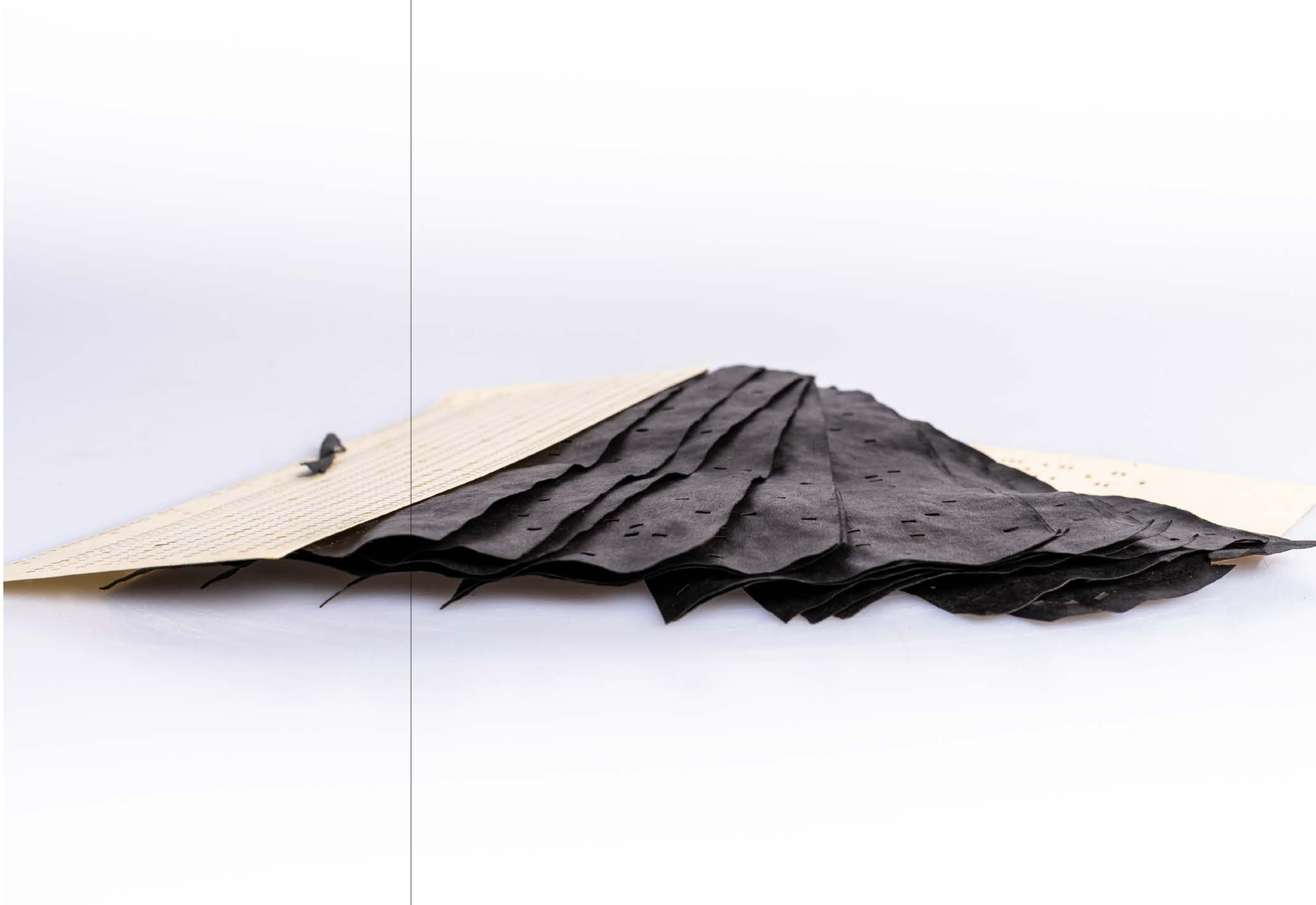
Left: *The Wall After Us* and *Towering* (detail), Installation, size variable

mean when aligned with soil, and what art might question when aligned with science. While charred media are not directly usable in terms of functionally repurposing waste or immediately useful in terms of forwarding new agricultural or climate policies, these things could be indirectly possible over the long-haul as more artists experiment with more scientists, and as Stern and Lehmann continue to collaborate alongside others across the arts, sciences, and engineering, formulating how to ask questions and find opportunities across *systems*.[21]

In this model of pre-questioning, there is much social and ethical value embedded in and activated by material objects that set in motion open-ended, long-term, exploratory paths without providing any answers.

[21] Lehmann and Stern are continuing to work together and will be soon be collaborating with mechanical engineer Ilya Avdeev and civil engineer Konstantin Sobolev on new material experiments.

Right: *Sequestered Punch Cards* (detail), Sculpture, 12 x .5 x 8 in



Previous Spread: Screws and Capacitors, Documentation
Left: *Seeker*, Sculpture, 13.5 x 10 x 10 in

Afterlives

Kennan Ferguson

Technology will save us.

This truism has been built into not only the current world economic system but also into the inherent teleologies of technoscience and research. The world (or humanity ourselves) may throw up tests, barriers, and trials, but by combining the proper research protocols with imagination and creativity, humanity's limitlessness can and will overcome them.

The signs of this theological system are manifold. Increased predictive power (of people as much as weather) signifies humankind's growing understanding of patterns, no matter how huge. Insights into our embodied selves, both in genetic makeup and in interactions with various biota (micro and macro) promise the remaking of human bodies to avoid disability, disease, and emotional disequilibrium. Increasingly complex models of the universe show the possibility of directing complex relations between subjects and environments.

On the other hand, the faith's adherents show signs of apostasy and division. Is the future of humankind in its emotional growth and maturity? Could current research money be best spent on future cities in the ocean, or space flight, or terrestrial climate control? Should we leave our bodies behind as we escape the limits of the material world in favor of the digital? Without a clear model of the future, each side argues, we risk misappropriating, misaiming, misspending.

The clashes between these technofuturisms in large part emerge from contentions regarding the possibilities of technology. For some, discoveries in nuclear physics could result in the possibility of interstellar travel within a generation, whereas others point to the increasing power of computing to replicate the intricacies of the human mind. The futurist Ray Kurzweil (one of the latter) proposed two core insights: first, that there appears to be no limit to the current increase in computing power, and second, that the selves we think we know are replaceable through complex renditions in silicon and circuitry. The first of these realizations relies on technical rather than intellectual grounds, but recent developments in both cloud and quantum computing continue to expand its possibilities. . . So far, Moore's law concerning the doubling of computational power every eighteen months, while not particularly precise, seems to have held approximately true for close to fifty years.[1]

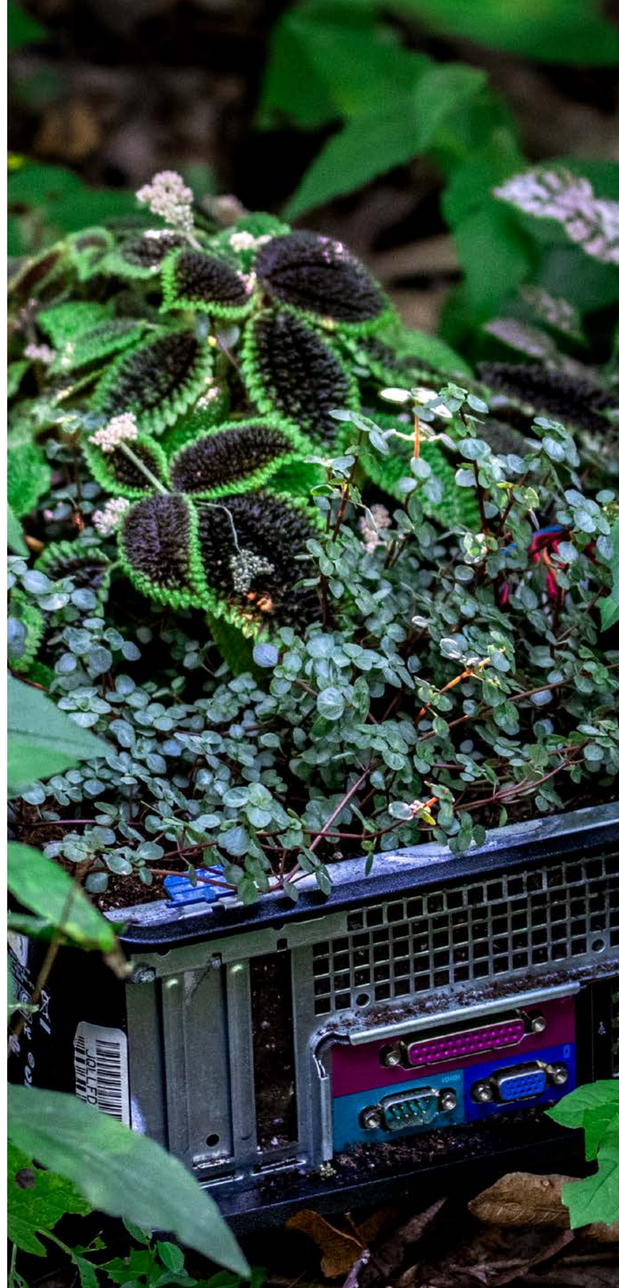
In regard to our selves, such a conception depends on limitations of will and intent. If the liminal forms the self, then the abilities and internalities of selfhood are constantly negotiated, as aspects of selfhood and expression emerge and are limited in various environments. Indeed, this proves an excellent definition of politics: the intellectual, ideological, and material struggles over those limitations and the shapes they can be made (or encouraged) to take. Though Kurzweil uses a less precise language than this, his underlying assumptions about modern selfhood are those of limit and exclusion.[2]

Technological utopianism emerges in the nexus of these insights: the limits to human individuality will be

Previous and Left: *Moss Def* (detail), Sculpture, 14 x 9 x 9 in
Right: *Farm in the Dell* (detail), Sculpture, 20 x 10 x 13 in

[1] Ray Kurzweil refers to those who contest this assumption as making "criticism from Malthus," "criticism from software," "criticism from analogue processing" in *The Singularity is Near* (New York: Penguin, 2006), 433-442.

[2] See Kurzweil 369-390, where Kurzweil describes his own consciousness as inherently about limits (though, he intimates, less so than most others).



overtaken and transcended by the ceaseless exponential acceleration in computing capacity. Kurzweil not only predicts but celebrates the ability of computers to do whatever it is that human brains do, in that he holds that consciousness is no more than what we make of experience, and nonbiological entities will have all that and more. He holds himself as both a herald and a prophet, albeit one whose conclusions arise from science and mathematical logic rather than from signs and revelations.

Such a turn toward technology as the transformative savior of the human race has a long and repetitious history. Laura Ephraim has shown how the advent of the telegraph, celebrated by scientific utopians and spiritualists alike, was integrated into a dream of humanity freed from the limits of space and time, where messages could join together into a universal humanity using electricity.[3] John Murray Spear's attempt to build the "New Motor," a limitless source of energy which would bring about the fall of slavery, similarly foretold a paradise on earth, where energy would free humanity from its heretofore unrecognized limits.[4] Such an invention (designed by an array of famous dead Americans and transmitted to Spear through mystical "automatic writing"), though ultimately unsuccessful, tied Spear and his followers into the combination of eschatology and technology. The New Motor was to be, in Spear's words, "the physical Saviour of the race."[5]

And yet the material forms of these futures – the physical architectures of technology – repeatedly disappear, both

[3] Laura Ephraim, "'An Electric Union Blest:' Post-humanist Visions from the Age of the Telegraph," Paper presented at the 2011 APSA, Seattle.

[4] John Walliss, "Spiritualism and the (Re-)Enchantment of Modernity," in *Theorizing Religion: Classical and Contemporary Debates*, ed. James A. Beckford and John Walliss (New York: Ashgate, 2006), 37.

[5] Joseph Laycock, "God's Last, Best Gift to Mankind: Gnostic Science and the Eschaton in the Vision of John Murray Spear," *Aries* V 10 N 1 (2010), 63-83.

Above: *Tiny Fan*, Print, 8 x 10 in

Left: *Towering* (detail), Four Sculptures Between 8 and 12 ft

from the public imagination and from the technofuturist idealizations. Who makes the server farms necessary to store and retrieve our new selves? Who extracts the rare minerals from which they are made? Who preserves the chips against heat and corrosion? Who oversees the network's interlinked branches, differentiating the intent of the programs from the intrusions of hackers and malware? What becomes of no-longer used hardware, wiring, *stuff*?

Why is it so easy to forget the material conditions of the technological present?


DELL

The artificial and bogus promise of the digital, above all, remains the escape from the material realm.

Digitalia promises to overcome the limits of the human brain, the restrictions of geographic space, the boundaries of temporal degradation and age. But in reality the material preconditions of the digital world anchor digital ideology — the dream of spacelessness and timelessness — in the transformational world of matter and growth. Supersessionist idealizations such as the Computational Singularity, where humanity can finally overcome its embodiment and consequently its mortality, or frictionless travel, where ideas and concepts encounter one another free of the limits of pragmatism, pluralism, and politics, each promote an absolute liberation and escape from material limitations. Each is built on the delusion of total escape: the expansion of a conceptual and rational realm disconnected from matter. In contrast, the physical stuff upon which the digital world relies — the hardware, the metals, the wiring — exist in a world of potential and actual density, subject to change, growth, and decay.

It is in this remembrance that Nathaniel Stern's project *The World After Us: Imaging techno-aesthetic futures* develops its most provocative insights. By combining issues of temporality and materiality, Stern attends to the underlying needs and effects of the virtual present, and questions the remainders of that present into the future. Divided into three subprojects (*Server Farms, Phossils,* and *Utilities* — and the installation version of the first two, together, in *The Wall After Us*), this project locates our present technofuture as one of remainder and refuse. What we imagine as immaterial, it shows, has both a presence and an afterlife.

Previous Spread: *The Wall After Us* (detail), Installation, size variable
Right: *Choo Choo*, Print, 10 x 8 in

This is not a dystopia, however. Those who reject technofuturist optimism too often point to a world made up of poisons and garbage. Blasted landscapes, gyres of plastic, mountaintops removed, forests burned, valleys filled: the general image of those who take the materiality of the current anthropocene seriously often amounts to little more than a conflation of current fears, ugliness, and blight. Speculative fiction which rejects clean, bright, and streamlined futurity almost always collapses into the landscapes of calamity and devastation.

But Stern's art pieces, while built on ruinations of technology, reject the principles of aesthetic dualism.

Obsolescence does not equal ugliness; deterioration is not disappearance; destruction can also be reuse. By engaging the afterlife of the technological object on aesthetic grounds, these pieces show the emergent nature of decrepitude, the reuse of refuse, and the building of collapse. From decay comes growth; from decomposition comes composition. From blenders and mid-twentieth century telephones to floppy disks and iPads, these objects' material continuation beyond their intended uses show transformations of beauty. Whether commixed with other technological objects, entangled in vines, spores, and creatures, or burnt or crushed by external forces, these objects still beguile and entrance.

What are the grounds of such philosophical location, however: what makes them objects of aesthetic judgments? Aesthetics, long thought to be the philosophical investigation of beauty and ugliness, has a long lineage. David Hume contended that such decisions remain merely a matter of personal taste. Immanuel Kant noted that arguments about art highlight the collective, political, and moral content of aesthetics. Aesthetic formalists held that the actual content of the artwork,

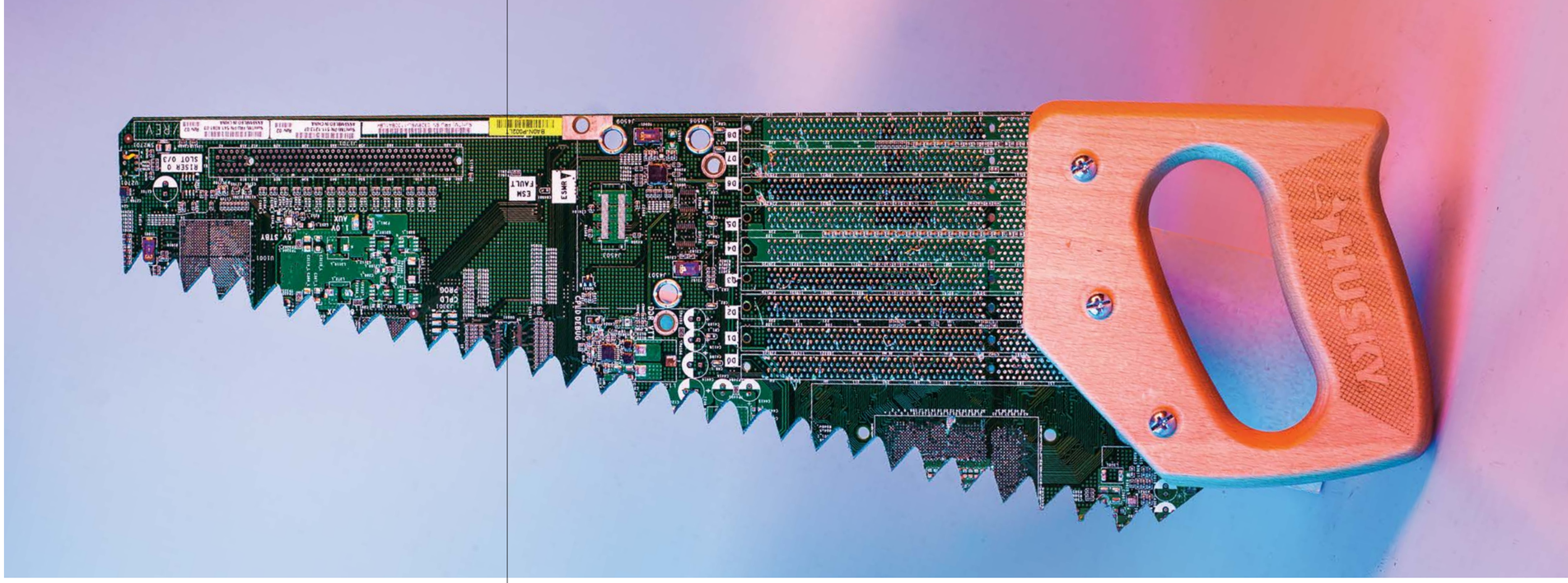
Left: *The Wall After Us* (detail), Installation, size variable

not the viewer, determined its true value. Each of these traditions depended upon a stable understanding of art, even when disagreeing about the aesthetic experience.

But this definition of art came to an end in the long twentieth century. From formalist experimentalism to experiential events to conceptual works to the fusion of art and advertising, the boundary between art and non-art – and thus the proper location of aesthetic judgment – became blurred, even at times non-existent. How to determine beauty (and ugliness) in the face of works which provoke, or disorient, or shame?

Many of the objects used in Stern's project were, in fact, originally created to be beautiful. Design has long been a desideratum for companies such as Apple Computing: purchasing their products means participating in an aesthetic economy just as much as a computational one. The design of other objects was oriented purely around functionality. Items such as floppy discs, motherboards, or wiring mechanisms were conceived as hidden or transitory parts of a technological experience, easily ignored or backgrounded in the practices of use.

And yet the afterlives of these designs transform aesthetic judgment. Highlighting the materiality of both – the ostensibly beautiful and the presumedly invisible – brings their similarities into focus. The procedures which these objects undergo in this exhibit undercut the design goals built into them. When crushed, burned, or eroded, the concreteness of (say) a screen's material makeup comes into focus, obscuring the intended aesthetic and experiential appearance. When remade into a hand tool, the strength and durability of a circuit board becomes far more important than the speed of its electrical paths. When considered as a platform for sphagnum growth, the capacity of a digital watch to retain water – not of interest to any designer – becomes paramount.



The afterlife of the technological, in other words, reconfigures our understandings not only of design and decay, but of aesthetic, formal, and material judgment. This, Stern's project shows, emerges from *processes* rather than use.

Imagining a world without people also means imaging a world without utility.

The effects of erosion, heat, oxidation, pressure: these replace the irrelevance of human intentions.

Above: *Hack Saw* (a *Circuitous* Tool), Sculpture, 17 x 6 x 1 in

Each artwork in this series weirdly contains both threat and beauty. The threat arises from the relative impermanence of human existence, both at the individual and the species level, when compared to the persistence of the materiality of our toys and tools. We don't matter. Or, at least not in the way our technological creations do: the shapes we have made, the containers we have developed, the wires we have crossed.

The beauty, on the other hand, emerges out of the same experience. *What is left of such things in the absence of intentionality and upkeep?* Those same forms, that same content: they reform, remake, persist. From our human perspective they become planters and ponds; from the perspective of the organisms which move into the previously clean crevices and newly filled cavities, they become a new home.

Not, however, a place of Emersonian nature. No inhuman purity for Stern. The world to which they gesture is our post-existence world, filled with the detritus and aftereffects of human beings. The poisons and contaminations which other theorists emphasize – chromium lurking in smartphones, microplastics floating off princess phones, lead leaching from cathode-ray tubes – remain present, but they do not dominate. Rather

insisting on the catastrophes of anthropocenic time, Stern's project emphasizes that those are disasters *for us* – not for the world after us. The fungi will be fine.

So what to "make" of all these homes, these effects, these decayed objects?

Are they, ultimately, beautiful? Ugly? Projects of art or of nature? The central motto of ecological conservation – "Reuse, Reduce, Recycle" – exists against the logic of the art world, which instead privileges creation, excess, and novelty.

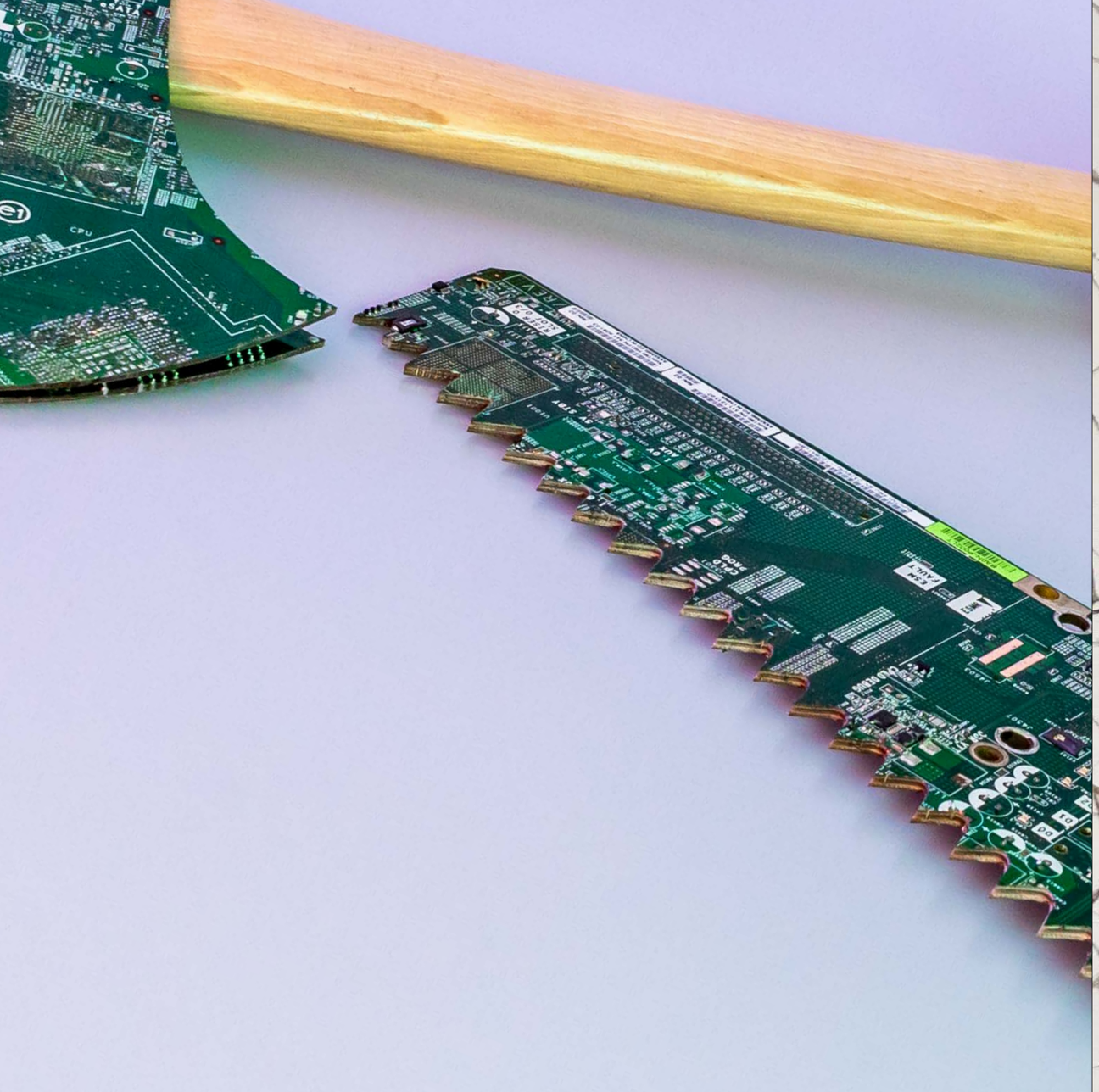
Stern's syncretic approach, arising from his long engagement with both technology and what he has called "ecological aesthetics," manages to conjoin these seemingly contrapuntal demands.[6] Against pure creation, Stern highlights the transformations that matter undergoes in the process of artistic engagement. Against excess, Stern limits his materials to those which highlight the waste of the rest of the contemporary world. Against novelty, Stern emphasizes the embeddedness of art in webs of already-circulating ideas, techniques, and subjects.

By emphasizing temporality and materialism, *The World After Us* undercuts the economic and capitalist demands of the art economy.

[6] Nathaniel Stern, *Ecological Aesthetics: artful tactics for humans, nature, and politics* (Dartmouth University Press, 2018).

Above: *Lab Test* (detail), 1 x 3 x 1 in

Above: *Untitled HD*, Sculpture, 29 x 17 x 6 in



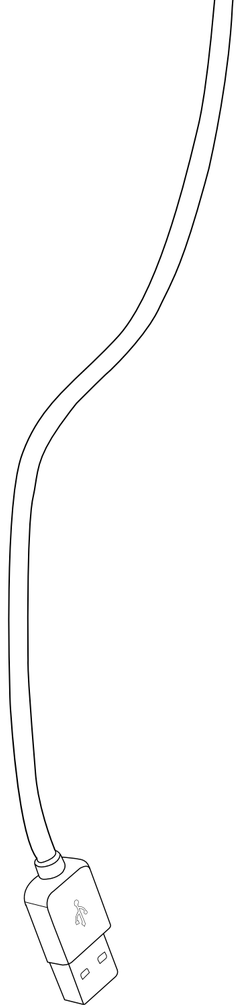
Corporations such as Apple may both make beautiful objects and invest in artistic creations, but they cannot escape time. These technological objects are neither new nor old, but transformed. Plants, fungus, animals, lichens remake. Their places in the world are not recycled, but new foundations. These are neither the reuses for humanity envisioned by conservationism and recycling, nor the originative creation demanded by the market. A new motto:

"Transform. Remake. Come forth."

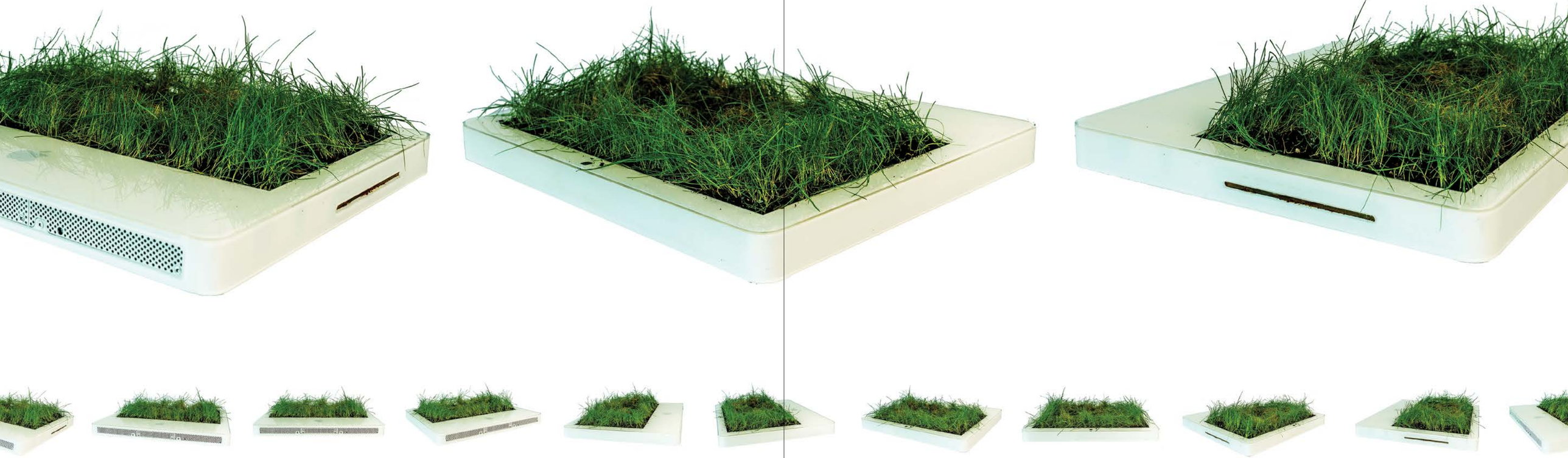
Who, then, is the "us" who technology will save? The world after cannot be saving the alleged masters of the world of machines and computers, for the utility of both falls away and leaves them as objects. But their refigurations do not remove them from their environments; instead they allow for novel tools, new creations, and unique media. Similarly, the "us" who created and used them – the governors and overlords of these machines – have receded. Are they extinct, or have they merely discarded the objects which remain?

Stern gestures to a world devoid not of technology, nor of innovation, but instead missing the easy assumptions of service and dependence. Who humanity was – that is no more. In these pieces, the "us" which now exists remains embedded yet unpresent, dematerialized. Only through the dramatization of the aftereffects of the world on our tools, can we see who we were.

We have been saved.



Left: *Empty Battery*, Sculpture, 5 x 7.5 x .13 in
Next Spread: Durban Server Farms Workshop, Documentation



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What's After the After?
Nathaniel Stern's Patatopian Visual Poetics

Coe Douglas

It was more of a smallish bang – but big in implication – that set a patatopian universe in motion, putrid smoke spiraling in every direction.

Here an *Ecokinetic Sculpture* – entitled *Toaster* – sizzled into existence, born of the primordial ooze of melted plastic and the pop of an exploded lithium ion battery accidentally left in the iPhone.

It is hard not to be swept away by Nathaniel Stern's *The World After Us*. Encountering the various works in his studio is like entering a strange landscape. What's here isn't a utopian vision; it transcends the dire forecasts of dystopian cultural thinking. Yes, there's still rot and a seeming dismantling of the matrix of wired networks and digital infrastructures. But something has happened. Something has collapsed, and from the ashes, *The World After Us* offers us a glimpse of the reboot. What is beyond dystopia? And what strange apocalypse is, in fact, being unveiled for us?[1]

I think of this future as patatopian.

At some point, we have to leave behind the sad (dis)comfort of dystopian art. All the plagues and breakaway civilizations make for fun ruminations on how we fucked this beautiful world up. But we've become stagnant; we need a nudge off the ledge into the after, into what I call the *patatopian*. Alfred Jarry defined pataphysics as the science of imaginary solutions. *The World After Us*, and patatopia, are less about solutions than enormous questions: a space in which to think, break, and re-make the unthinkable; Stern invites all of us to actively participate.

The patatopian *is* thinking-through the unthinkable, seeing-through (and beyond) the end times, and reimaging exactly how the world must, and will, go on. In taking Jarry's imaginary solutions and weaponizing them, the patatopian becomes instead a discipline and practice of wild possibility. Perhaps weaponize is not the right word. It is in fact the opposite. It disarms, but actively. Where Pataphysics is the science of imaginary solutions, Patatopianism is the art of *imaginal implication* – in which an interweaving and enfolding of dynamic *deweaponization* occur. There is a rhizomatic quality to this that weaves, or de-severs, the constituents of the future into a radical wholeness.

In the after, we are all odd kin.[2]

I see patatopian impulses all over Nathaniel Stern's teeming studio – dead tech, pulverized phones, and melted keyboards abound, each given a new purpose, implicated in the imaginal "after" as co-creators alongside creeping, spreading vines, chronos-minded spores, and connected communities of all manner of plant life.

Perhaps no single item in *The World After Us* is as patatopian as *Sporadical*, the broken and discarded Apple Watch with a mushroom growing out of it.

[1] Checking the etymology of apocalypse we see that the original greek apokálupsis literally means an unveiling.

Left and Previous Spread: *Towering*, Four Sculptures Between 8 and 12 ft

[2] And here astute readers may recognize my allusions to Timothy Morton and Donna Haraway.

Right: *Toaster* (detail), Sculpture, 13 x 11 x 8 in

According to Stern, *Sporadical* wonders, "What will digital media be and do, in and with the world, after us? And, it proposes a cybernatural future that is neither apocalyptic nor utopian, but – at the very least – a possible commingling of the supposedly conflicting categories."

Conflict, Problemitization, Implication, and Creation, I argue, are at the heart of patatopian imaginaries.

Sporadical is a piece that, according to Stern, "resituates, speculates, wonders, and proposes; and it asks us to do the same." Okay, here goes. What Stern has created with *Sporadical* is the quintessential *patatopian* timepiece – a mushroom-inhabited watch now transformed into a completely functional sundial. Strap it to your wrist, leave the shadows, and you're in sync with "natural" time, as you and your funghi track the sun's ever-dependable arc across the sky.

This all seems perfectly at home among the detritus, mushroom and watch each transformed in its own vital way.

Another act of transformation can be seen in the *Ecokinetic Sculptures*. Using simple elements of water, and earth (sand), and fire (heat), Stern puts each of the phones through various processes of erosion that accelerate time, moving forward to offer hints at his initial, catalyzing question: "what will my phone look like in a million years?"

Ecokinetic Scultpures, part of Stern's *Phossils*, or fossilized phones, exist in an almost spectral space, discarded remnants that seem absurd in their degraded form. A toasted HTC (*Toaster*). Two dozen or so flip phones

Right: *Fried Phones* (detail), Sculpture, 16 x 17 x 15 in
Next Spread: *Sporadical (worn)*, Print, 10 x 8 in

cooked in an air fryer (*Fried Phones*). An hourglass filled with coarse sand, flipping every hour of the exhibition, slowly wearing away a sawed-in-half iPhone (*Time Pieces*). An e-waste-filled aquarium, pumping water over another eroding mobile device (*Fountain*, an obvious Duchamp reference)…

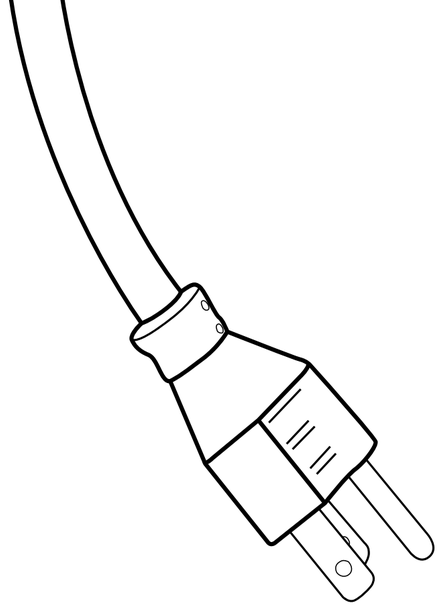
Aren't these the devices we have entrusted all our time to?

What's left after being *phossilized* are mere reminders of the things that once enslaved our attention so entirely. But powered down and pulverized, the spell is broken. The attention economy is relegated to shards and hunks of matter, that no longer *matter*: taken from the earth, and not returned, the cycle complete. Degadgetized from our gadgets, we can finally see clearly. The effect is profound, especially when we consider the extremes to which phones represent planned obsolescence and late-capitalist exploitation. The spectre persists, as billions of mobile phones are bought and discarded each year; but Stern pushes us to the next phase.

In many instances, *The World After Us* seems almost oracular in its ability to cast eyes into the after by literally producing artifacts from an imaginal future. While the speculative literary and artistic movement of Solarpunk envisions how to make the best of an inherited world, whatever that may be, Stern makes a new *World After Us*, a Solarpunk dream made manifest.

While Solarpunks are in pursuit of the cracks in the world where the light shines in, Stern refracts and reflects that light, magnifies and projects it. The Solarpunk vision is saturated with green spaces, cascading vertical gardens, botanicals retaking cities and living harmoniously with their human kin. Stern's *Server Farms* literalize a related vegetation-based sentience, where succulents and spider

Left: *Time Pieces* (an *Ecokinetic Sculpture*), Sculpture, 21 x 16 x 12 in



plants seek to maximize the use-value of the abandoned homes, where wires and circuit boards used to live. Each is a co-mingling of discarded electronics, soil, and live plant life.

The Wall After Us presents nearly 1000 square feet of *Server Farms, Phossils*, thrown-away laptops, tapes, and wires, alongside four spiked towers of electronic waste. Rising between eight and twelve feet tall, each is a totem to the errant gods of technology. They serve as cautionary reminders, symbols of the beginning of the end.

But while solarpunks are, according to theorist Andrew Dana Hudson, pioneers in the "wreckage of the unsustainable,"[3] Stern presents *non-humans* as pioneers.

[3] Andrew Dana Hudson, "On the Political Dimensions of Solarpunk" (Medium, 2015). https://medium.com/solarpunks/on-the-political-dimensions-of-solarpunk-c5a7b4bf8df4. Accessed December 13, 2019.

These artifacts from the future present technology and nature as fostering one another, and growing *together*, humans or no.

Taken as a whole, Stern's *The World After Us* haunts us. It is rife with spectres. These ghosts and bones of the present, when projected into the world after us, have a great deal to teach us: to not rely on the digital; to seek out questions that give agency to the widest possible number of collaborators, including plants, animals, and matter more generally; to image, and remake. Why not? *The World After Us* conveys a liveliness that embodies action. In this activation of imaginary questions, we arrive at the patatopian, the art of imaginal implications.

What can we learn from this? How can this transform us?

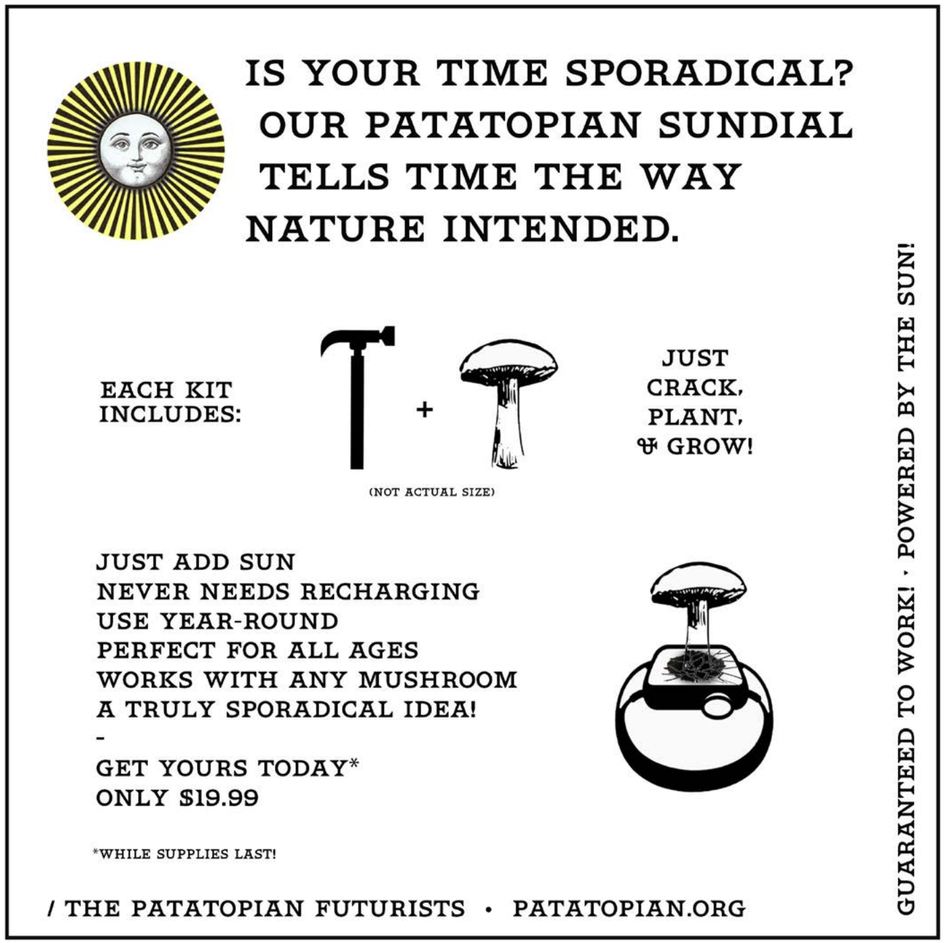
To the master pataphysician, Alfred Jarry, we are all pataphysicians, whether we know it or not. We all imagine solutions. Likewise, perhaps we're all destined to be *patatopians*, folding in new questions from, and with, and as, the world around us – and *after* us.

Look closely.

Stop and look closely at what Nathaniel Stern has created in *The World After Us*. His work manages to see-through and see-into what's after. Where we fit within this story remains to be seen. Depending on your perspective our role may be quite precarious. Yet it's not set in stone. Hints abound in the form of patatopian sundials and the insurgency of plant life against the tyranny of so much plastic and metal refuse. Stern implies that plants will find a way to persevere. Technology, too (though not for us).

But what will *we* do?

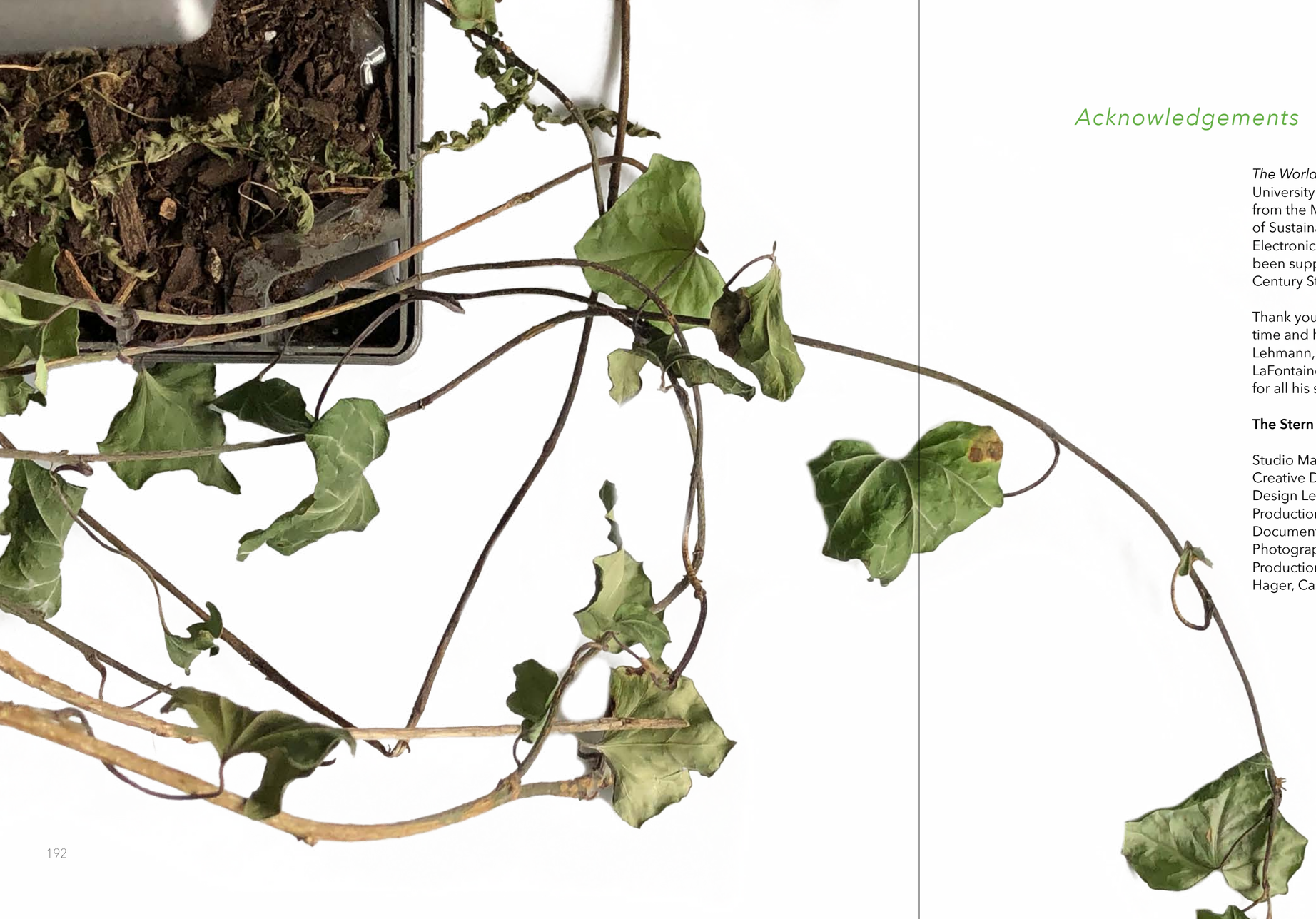
Right: *Fountain* (detail, an E*cokinetic Sculpture*), Sculpture, 12 x 9 x 8.5 in



Above: a Coe Douglas Original | RIght:*Toaster*, Sculpture, 13 x 11 x 8 in
Next Spread: *Durban Server Farm 7*, Sculpture, 25 x 14 x 13 in

Above and Left: *The Wall After Us* and *Towering* (details), Insallation, size varies


iPhone



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Previous Spread: *Time Pieces*, Sculpture, 21.5 x 12 x 15 in.
Left: Server Farm (detail), Sculpture, 25 x 6 x 18 in
Next Spread Left: *The Wall After Us (detail)*, Insallation, size varies
Next Spread Right: *Mixer,* Sculpture, 16.5 x 10 x 13 in, and Print (detail), 10 x 16 in


KitchenAid
Heavy Duty

Author Biographies

Nathaniel Stern is an awkward artist, writer, and teacher, who likes awkward art, writing, and students. He holds a 50/50 dual appointment as Professor of Art and Design / Mechanical Engineering at the University of Wisconsin-Milwaukee. Nathaniel's art – across ecological, participatory, and online interventions, interactive, immersive, and mixed reality environments, prints, sculptures, videos, performances, and hybrid forms – has been shown internationally. He is the author of *Interactive Art and Embodiment: The Implicit Body as Performance* (Gylphi 2013) and *Ecological Aesthetics: artful tactics for humans, nature, and politics* (Dartmouth 2018). He lives in Milwaukee with his wife, Kate, their billion children, and a truly evil cat.

Amanda Boetzkes is Professor of Contemporary Art History and Theory at the University of Guelph. Her research focuses on the aesthetics and ethics of art as these intersect with ecology and visual technologies of the late 20th and early 21st centuries. She is the author of *Plastic Capitalism: Contemporary Art and the Drive to Waste* (MIT Press, 2019), *The Ethics of Earth Art* (University of Minnesota Press, 2010), and co-editor of *Heidegger and the Work of Art History* (Ashgate, 2014). She has published in the journals *The New Large Glass*; *e-flux; Polygraph; Postmodern Culture; Art Journal; Art History; Weber-The Contemporary West; Reconstruction; Studies in Contemporary Culture;* and *Antennae: The Journal of Nature and Visual Culture*, among others. Recent book chapters appear in *Materialism and the Critique of Energy* (MCM', 2018); *Petrocultures: Oil, Energy, Culture* (McGill-Queen's Press, 2017); *Fueling Culture: 101 Words for Energy and Environment* (Fordham University Press, 2016); *The Edinburgh Companion for Animal Studies* (Edinburgh University Press, 2017); and *Art in the Anthropocene: Encounters Among Politics, Aesthetics, Environments and Epistemologies* (Open Humanities Press, 2015).

Coe Douglas is a multi-disciplinary artist, writer, and Pataphysician. He teaches design and storytelling at the University of Wisconsin-Milwaukee in Peck School of the Arts. Coe's writing has appeared in *The Rumpus, Brooklyn Rail, Cosmonauts Avenue, Perversion Magazine*, and elsewhere. His work explores the collision of image and text and the vast possibilities of narrative forms.

Kennan Ferguson teaches political theory at the University of Wisconsin-Milwaukee, where he is a Professor in the Political Science Department. He is the author of *All in the Family: On Community and Incommensurability* (Duke), along with several other monographs and edited collections, and the forthcoming *Cookbook Politics* (U of Pennsylvania).

Jennifer Johung is Associate Professor of Contemporary Art and Architectural History at the University of Wisconsin-Milwaukee. She is the author of *Vital Forms: Biological Art, Architecture, and the Dependencies of Life* (UMinn, 2019), *Replacing Home: From Primordial Hut to Digital Network in Contemporary Art* (UMinn, 2012), and the coeditor of *Landscapes of Mobility: Culture, Politics, and Placemaking* (Ashgate, 2013). In addition to her research, she commissions artworks and curates exhibitions.

Johannes Lehmann, Liberty Hyde Bailey professor of soil science at Cornell University, received his graduate degrees at the University of Bayreuth, Germany. Johannes focuses on microscopic-scale investigations of soil organic carbon, the effects of fire on soil, and the use of biochar for climate change mitigation and a circular economy. Johannes is the co-instructor of a course that explores the humanities' and artistic viewpoints on environment, science, and sustainability. He has authored more than 250 journal publications, was named Highly-Cited Researcher by Thomson Reuters since 2014, is a member of the German National Academy of Sciences (Leopoldina), and serves as editor-in-chief of the journal *Nutrient Cycling in Agroecosystems*.

Kate Mondloch is Professor of Contemporary Art and Head of the Department of the History of Art and Architecture at the University of Oregon. She is author of *Screens: Viewing Media Installation Art* (University of Minnesota Press, 2010); and *A Capsule Aesthetic: Feminist Materialisms in New Media Art* (University of Minnesota Press, 2017), for which she developed a related multimedia publication, *Installation Archive: A Capsule Aesthetic*, using the Scalar platform. She has published in a variety of journals, including the *Art Journal, Art Bulletin, Feminist Media Studies, Leonardo,* and *Vectors*, and contributed essays to anthologies such as *Exhibiting the Moving Image* (JRP/Ringier), *Screen/Space* (Manchester University Press); and *The Johns Hopkins Guide to Digital Media*.

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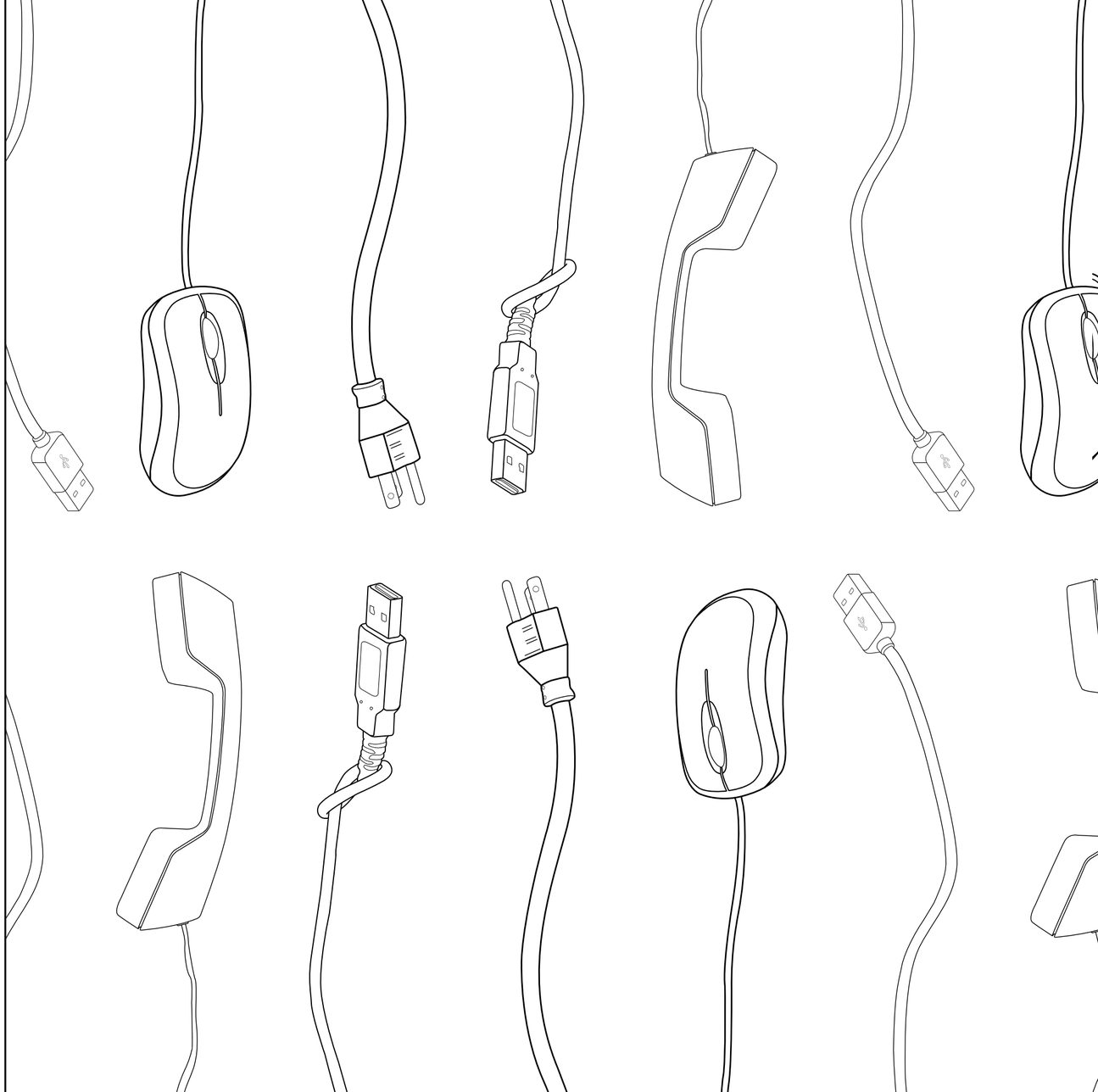
After

The World After Us: Imaging techno-aesthetic futures. Edited (with introduction) by Nathaniel Stern. First Edition. Published in Wisconsin, January 2020.

For a 7-minute documentary about *The World After Us,* please visit:
http://nathanielstern.com/artwork/documentary

Cover Image: *Sporadical (rearview)*, Print, 35 x 14 in

documentary link



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