THE REVERSE OF THE SUBLIME

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Followed by a Converstation with Tamiko Thiel

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In the heart of Turin there is a museum with a unique name: *Parco Arte Vivente*, the Park of Living Art (PAV). You can access it through a modern building, a house full of light contained by glass and wooden walls. Seen from the inside, the museum, with its educational labs and temporary exhibits, is not particularly extensive. The larger part is outside. A garden surrounds the house, with a gigantic clover leaf—*Trèfle* (2006) by Dominique Gonzalez-Foerster—carved into the ground. Its perimeter, covered with ivy, is shaped using the materials that were dug out for the construction of the park. Spreading over the museum's roof, a visual echo of the hills in the park, is another garden, *Jardin Mandala*, designed by the French landscape architect Gilles Clément: a self-propagating collection of resilient plants that interact perfectly with the surrounding flora. Bees, temporary installations, a raw-clay oven, urban vegetable gardens, and sundry emergences of natural-cultural creativity inhabit this former industrial area, expanding over nearly 2,5 hectares, where every project lives in constant co-evolution with the place and the other artworks. Inaugurated in 2008, the PAV was designed by Piero Gilardi, the legendary father of the *Arte Povera* movement. Making and disseminating art in the city—especially a postindustrial one such as Turin—is like crafting a garden in the ecology of the mind. In Gilardi's words, the PAV is "a public art institution with the political goal of creating an 'incubator' of ecological awareness," whose driving force is the "co-creation" between artists and visitors, humans and nonhumans (Gilardi 2016, 7; my translation). That this garden is an epitome of contemporary hybrid landscapes is perfectly evident to the visitors to the park. Surrounded by buildings, cut through by traffic arteries, and practically merging with the site of the city's waste-management company AMIAT (which is one of the museum's donors), the Park of Living Art is a metaphor for the Anthropocene garden: a residual and resilient nature to show to schoolkids and with which they can experiment, something to protect and set free before it gets strangled by the smog and reinforced concrete of the city's embrace.

I visit the PAV quite often. It is a huge treat to walk around the park with Gilardi, talking with him and exploring old and new installations, or hearing about new projects from the director Enrico Bonanate, a former lawyer who, in his mid-thirties, decided

to quit his job in a law firm and join Piero in this audacious "biopolitical" adventure. Here, spots of "urban wildness" live side by side with media art and Gilardi's famous *Tappeti natura* (nature carpets), compositions where "ambiguous" natural vistas and objects are perfectly reproduced in polyethylene and other synthetic materials.[1]

Every time I find myself in this inspiring and unusual setting, surrounded by natural and alter-natural objects, I cannot help mulling over this encountering of garden, art, and ecology. As I wonder about this fascinating ensemble of organic and inorganic, human and more-than-human creativity, the old question that Joseph Meeker asked about the evolutionary role of literature and its creation starts resonating in my mind almost spontaneously: "Is it an activity which adapts us better to the world or one which estranges us from it? From the unforgiving perspective of evolution and natural selection, does [literature] contribute more to our survival than it does to our extinction?" (Meeker 1972, 3–4). Inescapably, I end up asking myself: what is the role of art in this geopolitical machine that life on earth has become? And what are the implications of thinking together the garden—both as urban form and artistic trope—and the Anthropocene? In other words: What do we discover if we read all these natural–cultural figures with and through one another?

My response to these questions will sound like a provocation—and perhaps it is. Let us try to understand why. For many centuries, the garden has been at once a theory and a practice for creating order out of chaos. Whether shaped according to the laws of geometry or modeled upon an ideal of "freedom," gardens indeed are eloquent embodiments of the human aspiration to *redeem, tame*, and *remake* nature, turning it into an exquisite and reassuring dwelling. Considered more closely, however, the aspiration to transform nature—disquietingly defined by Karl Marx as "man's *inorganic* body" (1992 [1844], 328, emphasis added)—is also part of the discourse that has supposedly plunged the planet into the Anthropocene. Seen in this light, the Anthropocene, too, is a garden: a colossal, dysfunctional, and hubris-ridden garden, escaped from the hands of those who triggered it and populated by the material consequences of their ideals and ideologies. Of course, I am not implying that "Anthropocene" and "garden" are two equivalent concepts (and even less that they are two equivalent realities). Yet, it is a matter of fact that, just as the latter emerges from the desire to give nature a neutralized shape that brings its creativity closer to our visions, in the former a hybrid, out-of-control, techno-geological agency comes to remind us about the abstractedness

of our dreams of single-handedly shaping natural dynamics. Even more remarkable, both the garden and the Anthropocene are enabled by "transfers of wealth and waste" (Gan et al. 2017, G4): the apparently infinite plunder of resources and the practice of externalizing the diverse metabolic costs of their transformation. However, while the garden might disguise its externalities by shaping them into aesthetic artifices, in the Anthropocene world the mere idea of externality is, by definition, no longer possible—and for a very simple reason: there is no outside anymore, whether in time (the future) or in space (ocean, atmosphere, colonial lands, the poor's backyards). The philosopher David Wood calls this condition the "loss of externalities" (Wood 2005). As Timothy Clark writes, "To live in a space in which illusions of externality have dissolved is to see the slow erosion of the distinction between the distant waste dump and the housing estate, between the air and the sewer, between an open road and a car park, and between a self-satisfied affluence of a Sydney suburb and a drowning village in Bangladesh" (2014, 82). That is one of the consequences of our becoming geological: all that happens, happens here and now; the ripples of our actions, as well as of our visions, will sooner or later reverberate right at our feet, directly in our gardens. This future tense ("will reverberate") is actually inappropriate: they already do so—the extent to which we experience these backlashes only depends on how socially privileged or geopolitically fortunate we are.

The end of externalities means that everything stays here: we have to deal with the consequences of what we do, of our actions as well as our visions. In other words, we have to "stay with the trouble," as Donna Haraway (2016) famously put it. In many respects, therefore, our *oikos*—the planet, this tantalizing garden in which we are at home—becomes *unheimlich*, literally uncanny and unfamiliar. This postnatural environment is populated by eerily manifold denizens, including absent beings and unwanted presences: these are the ghosts and monsters of the Anthropocene, as suggested by *Arts of Living in the Anthropocene* (2017), a very inspirational book edited by Anna Tsing and a collective of international anthropologists. As the editors explain, "Our ghosts are the traces of more-than-human histories through which ecologies are made and unmade. [. . .] Every landscape is haunted by past ways of life" (Gan et al. 2017, G1–4). Think, for example, of the shadowy traces of old cities now erased by layers of time and concrete. Think of the historical ecologies emerging from the ruins of "past landscapes of cultivation," "ghostly presences" now returned to semi-wild conditions (Mathews 2017, G146). Or think of the vestiges of former lives in present-day

landscapes and ecosystems, like the vanished bee species whose existence we only know of thanks to the fact that "a living flower"—an orchid—"still looks like the erotic organs of the avid female bee hungry for copulation" (Haraway 2017, M33).

The emotional constellation of these landscapes is one of simultaneous sorrow, bewilderment, and amnesia. The ghosts that we find here both prompt and challenge our memories about the lost beings. On the one hand, in fact, they stand like empty spots awaiting signification in the midst of a saturated territory where "life persists in the shadow of mass death" (Gan et al. 2017, G8). On the other hand, their emptiness is compensated by something that continues the symbiogenetic dynamics in novel unpredicted conditions, driven more by the effects of contaminations than by evolutionary processes. Such are the monsters, and they are "the wonders of symbiosis *and* the threats of ecological disruption" characterizing our time (Swanson et al. 2017, M2). From over-proliferating jellyfish to radioactive mutations, these monsters "ask us to consider the wonders and terrors of symbiotic entanglements in the Anthropocene" (M2).

Uncanny metamorphics and extinct beings, monsters and ghosts are the two faces of this garden where we can cultivate memory only through hints and traces. Here, to borrow from Cate Sandilands (2017), we learn to mourn and love through the trauma of loss and transformation.[2] But, as these multifarious agencies show, the Anthropocene has the power to mobilize our imagination, too, and this power is key to our urge to find new venues and expressive modes for such a collective trauma. Faced with these unfamiliar presences and ambivalent emergences, art can, therefore, not only actively respond to this need but also become "a polyarchic site of experimentation for living in a damaged world, offering a range of discursive, visual and sensual strategies that are not confined by the regimes of scientific objectivity, political moralism or psychological depression" (Davis 2018, 64).

Media art is a very powerful tool in this creative strategy, and I would like to bring into this conversation what I consider to be a very eloquent case in point. Monsters and ghosts, indeed, populate the experimental scenery of "new natural forms" appearing in the artworks of Tamiko Thiel, whose premise is to turn this "polyarchic" artistic research into an ecopolitical program. Well known for her pioneering experiments in the fields of Virtual Reality (VR) and Augmented Reality (AR), Thiel is an engineer by

training and a founding member of the artist group Manifest.AR. An eco-art activist, she animated guerrilla AR interventions and uninvited performances in prestigious sites such as New York City's MoMA and the Venice Bienniale. An American with Japanese roots, for several years she has been working in Munich, where she has found herself at home in Schwabing, not far from the Rachel Carson Center.[3]

The aesthetic figure of the garden features prominently in Tamiko Thiel's works. In her spectacular installations, the garden undergoes a curious metamorphosis: from being a *hortus conclusus* and a symbolic embodiment of harmony between fauna and vegetation, it becomes a laboratory for the bio-technological hybrids of this extranatural phase of earthly life. An eloquent example is her *Gardens of the Anthropocene*, a public space AR installation, which was originally commissioned for the Seattle Art Museum's Olympic Sculpture Park in 2016. "Eradicated" from Seattle, it has been disseminated to other sites such as the Pioneer Works Art Center in Brooklyn, New York, and the Salem Maritime National Historic Site in Massachusetts. A recent "infestation" took place on the Stanford University campus.

As Thiel explains, *Gardens of the Anthropocene* "posits a science-fiction future in which native aquatic and terrestrial plants have mutated to cope with the increasing unpredictable and erratic climate swings" (2016). Whether endangered or more common, the plants featured in the *Gardens* are all modeled on the native vegetation in and around the Olympic Sculpture Park—vegetation that can thrive with land droughts and warming seawaters, and is hence expected to adapt to the temperatures of a progressively warming climate. Taking its cue from scientific grounds, the installation goes on to imagine a "surreal, dystopian scenario" (Thiel 2016) in which plants face a techno-biological mutation: while the "originals" are organisms capable of extracting nutrients from sunlight and soil, the mutant ones feed on the electromagnetic radiation of mobile devices and artificial structures such as road signs or street lights.[4] In this way, Thiel continues, the new creatures "breach natural boundaries," eliding not only the physical divide between underwater and dry land, but also the ontological–taxonomic frontier between "reactive flora and active fauna." These mutants, in fact, display behaviors and habits that are only understandable as the outcome of a world of distributed agencies, which are at once organic and inorganic, "natural," social, and technological. Combining ecopolitical prophecy, techno-hallucination, aesthetic lure, and irony, they are a virtual projection of
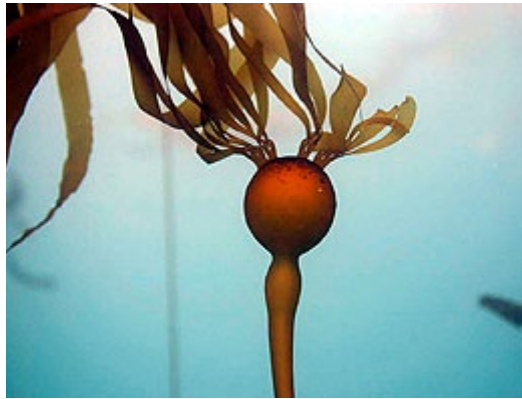
Donna Haraway's cyborg, "a hybrid of machine and organism, a creature of social reality as well as a creature of fiction," showing how "the boundary between science fiction and social reality is an optical illusion" (1991, 150).

Pseudo-scientific nomenclature is an integral element of Thiel's project: the virtual mutants occupying *Gardens of the Anthropocene* all have both a common and a Linnaean name (whose Latin, ironically, undergoes a few small "mutations" itself!). One of the most spectacular specimens is the "bullwhip kelp drone" (*Nereocystis volans*) (figure 1). This neospecies is a transformation of *Nereocystis luetkeana* or bullwhip kelp, a type of algae living in deeper offshore waters and growing up to 36 meters, partly edible and traditionally used by Northwest Coast Indians to make fishing tools (figure 2). A curiosity: the original Greek name, *Nereocystis*, means "mermaid bladder": it does, therefore, already refer to a hybrid human-nonhuman female being, thus reminding us that, before Darwin revealed the deep-time kinship of all living beings, the imagination of ancient myths was already interweaving natures and realms. In *Gardens of the Anthropocene*, exemplars of *Nereocystis volans* are amphibious flying "drones" that fluctuate up and down the hills of Seattle. Thiel endows them with a lurking dark agency: "in the aftermath of storm surges that tear away roadside fixtures and destroy buildings they feed off of [hu]man-made

structures and detritus, carrying them off in the vortex of their ro-tor blades" (2016).

Another interesting denizen of *Gardens of the Anthropocene* develops from a flower, *Clarkia amoena* or farewell to spring, a plant native to the coastal hills of Northern California and British Columbia that generally grows in dry areas and germinates to-

Figure 2:
Nereocystis luetkeana,
or bullwhip kelp.
Photo: U.S. National
Oceanic and Atmo-
spheric Administration
(public domain)

wards the end of the spring, when the weather begins to warm up. In the semi-arid landscape of Seattle, *Clarkia amoena* has mutated into a succulent named *Clarkia antenna* or *Clarkia irritabilis* (figures 3 and 4). Its alternate name comes from the fact that the plant is "preternaturally reactive," namely, it reacts to the presence of human-made devices. As Thiel specifies, antennate farewell to spring has "two or three stages of development, in which the stamens and pistils begin to fuse into an antenna-like form. In the final mutation, the flower petals have developed 'marginal teeth' on their rims that detect the presence of mobile devices, and the flowers enlarge to apparently feed off the electromagnetic emissions." She adds: "The behavior of the flowers is un-nerving, but does not produce any known ill effects in humans" (2016).
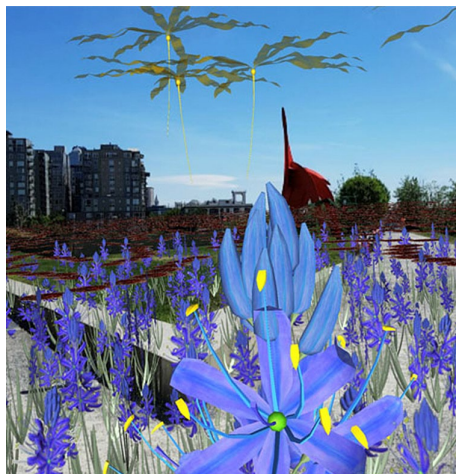

Figure 3:
Farewell to spring,
Clarkia amoena.
Photo: Kirill Ignatyev,
flickr (CC BY-NC 2.0.)

Figure 4:
Antennate farewell to
spring (*Clarkia antenna*) with bullwhip kelp
drones (*Nereocystis
volans*) in the back-
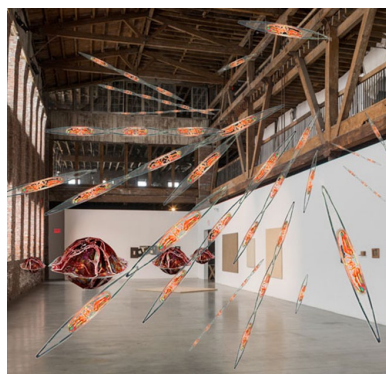ground, at the Seattle
Art Museum Olympic
Sculpture Park

Other mutants in Seattle's Olympic Sculpture Park include *Camassia radaria* or radar camas, originating from "blue camas" or *Camassia quamash*, a plant that has adapted to a warming climate and techno-devices by assuming the shape of a succulent and by developing motile behavior: "when approached the flowers become agitated and begin to rotate like a radar antenna," the artist writes on her website (Thiel 2016). Unlike its biological ancestor, which is edible (and yet dangerously similar to a poisonous species, the so-called "death camas"), *Camassia radaria* does not seem to be fit for human consumption: "Care should be used in ingesting the plant, as it may have become toxic as well," Thiel warns (2016) (figure 5). Another dangerous infestant, the huge airborne algae *Alexandrium giganteus* or *Alexandrium aerius*, is a metamorphosis of the single-celled microscopic algae *Alexandrium catenella* that plagues the Puget Sound, causing toxic "red tides" and which is expected to thrive in warming waters. Further developed is the larger *Alexandrium colossus*; this mutant, Thiels notes, "has also been detected in the Red Hook area of Brooklyn, in New York Harbor, along with a new mutant form named *Pseudo-nitzschia immensa*." This latter is a mutation of *Pseudo-nitzschia*, a planktonic diatom causing permanent loss of short-term memory (figures 6 and 7).

Suspended between the tongue-in-cheek and the *unheimlich*, these bizarre creatures represent Thiel's artistic way of mobilizing the narrative of the Anthropocene. As Heather Davis writes about arts in the Anthropocene, "arts are part of the emergence of narratives about the ways in which we live in the world, narratives that can be damaging or visionary, which can connect or dislocate us from the earth" (2018, 65). Embedded in this affective-relational perspective, the strategy enacted by Tamiko Thiel is extremely productive. On the one hand, she fills an existing landscape with presences that fall into the intersecting perimeters of our imagination and of our perception, inviting us to be part—at once cocreators and characters—of this narrative. What also clearly emerges, however, is that this very narrative is a self-propagating reality, and that the directions it takes might be diverging from our expectations. Reflecting in the wake of the Anthropocene's turbulences, Jean Luc Nancy states that "the unexpected—without-an-organizing-discourse" is "the regime of the existence of the world, of humans, and all beings" (2015, 89). Somehow resonating with this idea, in *Gardens of the Anthropocene* Thiel weaves our artistic experience with the evolution of an amplified reality that is both object and subject, thus creating a sort of *ante-rem* cautionary tale, halfway between a possible future and an already existing world. But, however unpredictable, this mutant future is not unruly: the taxonomic denominations and descriptions provided by the artist and her science-fictional tropes are indeed a way to put order into the agentic chaos of these incipient eco-techno systems.

Aesthetically remindful of Yayoi Kusama's work, *Gardens of the Anthropocene* is an attempt to challenge indifference and amnesia by creating what the artist calls "poetic spaces of memory" for planetary life-forms—spaces where, at the same time, the simulation of an accelerated techno-natural evolution also expands our perception of time. In doing so, Thiel designs a recursive temporal dimension in which old plant species visually converge with their monstrous counterparts. Contributing to this aesthetic-cognitive process, art opens here virtual windows on a possible world, one populated by post-Darwinian life-forms that inevitably recall the organisms threatened by the growing planetary disorders.

The technology on which Thiel's art is based is a key element in this discourse. In terms of memory strategies as well as ecological awareness, in fact, AR eco-art has powerful effects, moving memory "from the internally imagined landscapes of *ars memoriae* to the real, concrete spaces of the physical world" (Schliephake 2016, 574),

and potentially turning into a precious ally of the environmental imagination. As a matter of fact, these "holistic and integrated" artworks can magnify our capacity to visualize "the impact humans have on ecosystems, the places where we live, and the other species with whom we share these places" (Irland 2016, 60). The power of creative eco-media to affect our cognitive and emotional sphere is pointed out by Alenda Chang and John Parham in the Introduction to their guest edited issue of *Ecozon@* on "Green Computer and Video Games" (2017).[5] Virtual Reality, they observe, can "immerse us in environments while narrating ecological interrelationship," hence intensifying the "linkage between body, environment, and narrative forged [for example] in motion pictures" (Chang and Parham 2017, 9). In the case of Thiel's AR artworks, this linkage is enriched with more subtle conceptual layers. With its interactive aesthetics and fuzzy techno-natures, *Gardens of the Anthropocene* is not simply a prompt to reflect on the fluctuating boundary between organic and inorganic, but also the virtual as well as material-ontological site for reinventing and problematizing the notion of kinship. Surrounded by these eerie presences, we cannot help interrogating how akin our reality is to the augmented reality of the *Gardens* and, even more, how akin we are to these mutants. Far from being merely an unusual experience, finding ourselves vis-à-vis giant lilies or algae-drones might therefore bring about modes of "becoming-with" and stimulate our response-ability toward the changing planetary configurations (cf. Bianchi 2017, 147).

But other questions arise if, for a moment, you step outside the aesthetic-conceptual circle of augmented perception, and observe this edifice from an external perspective. To what extent are these gardens entangled with the Anthropocene's dynamics? How real are these monsters? A famous sentence, found in Goethe's scientific works, claims that "even what is most unnatural is Nature" (Goethe 1987, II.2, 477).[6] However, it is hard to think of these simulated objects adrift over Seattle's hills as something real, let alone "natural." After all, one could say, Thiel's mutant gardens are only immaterial presences in a landscape inhabited by other, much richer materialities. Compared to the heavy reality of contaminations, waste, and bio-social crises, virtual art appears thin, light, almost imperceptible. But is it really so? Is the virtual world really so "light"? If we consider the relationship between these "thin" gardens and the unsustainable landscapes of the Anthropocene, in fact, we will see that virtuality—in all its forms, and certainly not just in Thiel's installations—conceals a dilemma. To understand this predicament we should take a closer look at this technology. AR indeed has innumerable applications,

the best known and most widespread of which are the ludic ones: let us think of the on-line video games that drive thousands of players to capture virtual "prey" taking entire cities as their playground. Other uses might have important functions ranging from the field of education to that of defense, but in many other cases—for example, geolocaliza-tion, virtual tags, social networks—we employ AR without even realizing that we are doing so. All these functions depend on a "technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view" (Maxwell 2009). This implies a combination of real settings and computer-generated objects that enlarge—"augment"—our experience of the world. Given a real or, as in this case, artistic subject, captured on video or camera, AR computational technology expands that image with extra layers of digital information. To summarize: with the help of a digital device (a smartphone, a tablet, or smartglasses) and a connection to a data server, this technology recreates reality from within an already existing reality, which also means recreating the environment from within an already existing environment, transforming the static setting of a painting or a picture into a dynamic and interac-tive one. In this way, the Seattle Art Museum—and any other technologically equipped site to which the artwork is moved—can become the setting for Anthropocene gardens populated by mutant presences, and by us along with them.

Yet, the question remains: Where do these virtual monsters exist *bodily*, and what is their substance? Is their immateriality factual or pretended? Which is the actual *reality* of these seemingly flimsy images, of these apparent ghosts? These are not rhetorical questions. There is indeed nothing more material—and collectively so—than the so-called "virtual." The digital forms we see wherever these mutant gardens appear exist thanks to the network of silica, minerals, metals, plastics, and electricity whose ten-tacles spread, via a very material "cloud," to our very material cell phones or tablets. And so, these gardens are real, and they are literally *the* Anthropocene gardens: their topography—a topography of "servers, wires, undersea cables, microwave towers, satellites, data centers, and water and energy resources" (Carruth 2014, 342–43)—is the very topography of the Anthropocene. As has been emphasized, this is the land-scape behind the aerial metaphor of the "cloud"—an entity that also conceals the intricate and massive business of the "corporate bodies [that] produce, operate, sell, profit, and mine individual data from networked systems" (Chang and Parham 2017, 3). Nature, in fact, "affords and bears the weight of media culture, from metals and minerals to its waste load" (Parikka 2015, viii). This is something that ecomedia schol-

Figure 8

ars like Sean Cubitt, Jussi Parikka, Siegfried Zielinski, and Salma Monani have seen very clearly.[7] That is why the Anthropocene is also, and essentially, connected to a "geology of media," localized in the mineral and metallic components of our computers, televisions, batteries, and electronic devices in general, whose lithic parts include rare-earth elements such as europium, dysprosium, terbium, promethium, metallic ores such as the conflict-ridden coltan, or precious metals like gold and platinum. From this close-up into the microscopic and the unseen side of our everyday media experience, we discover that "a deep time of the planet is inside our machines, crystallized as part of the contemporary political economy: material histories of labor and the planet are entangled in devices, which, however, unfold as part of planetary histories. [. . .] Digital culture starts in the depths and deep times of the planet" (Parikka 2015, 50). Far from being thin and light—almost impalpable—our luminescent clouds obscure an entire world of mines and elements, that are in fact as heavy and ancient as the universe. And so, whether or not we perceive the deep holes around these digital gardens, they are yet another outburst of our becoming-geological.

I have seen—with dazzling wonder—another specimen of Thiel's Anthropocene gardens at the Pinakothek der Moderne in Munich, in the company of the artist. It was a cold January afternoon in 2018, the unforgettable year of my Carson fellowship. The installation's title—perhaps a provocative counterpoint to the fact of being in one of the highest peaks of Western civilization—was *Wild Garden*. Here, thanks to an app I downloaded directly from the museum's Wi-Fi network by scanning a QR code with
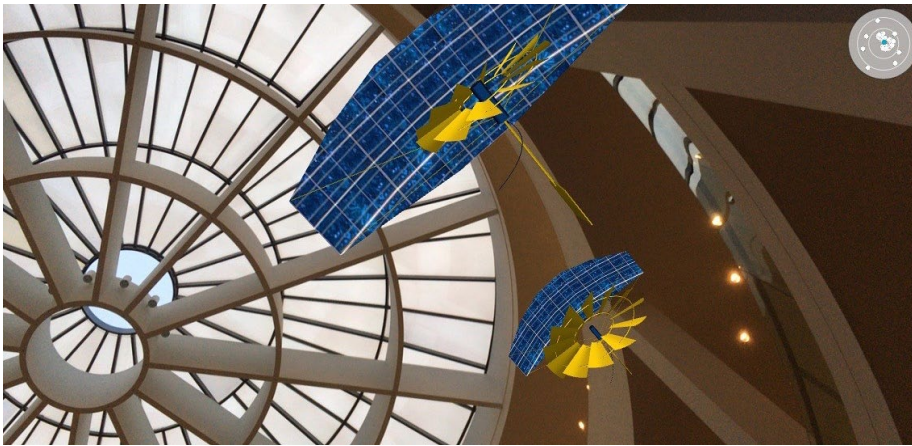
Figure 9

Figure 10

my smartphone, gigantic water lilies, flying engines, and huge flowers started materializing around me (figures 8 to 10). On my cellphone screen, I was literally seeing the ghosts that surrounded me—ghosts previously invisible to my naked eye. And they were there, not only on the screens of our tablets: they were at once the ghosts and the monsters of the Anthropocene.

However innocent and aesthetically sublime, these virtual creatures—like the global networks of our devices, habits, production processes, and ideologies—are part of what Jussi Parikka calls "the sphere of medianatures" (2015, 13): "a regime consti-

tuted as much by the work of micro-organisms, chemical components, minerals, and metals as by the work of underpaid laborers in mines or in high-tech entertainment device component production factories, or people in Pakistan and China sacrificing their health for scraps of leftover electronics" (2015, 14; see also Parikka 2018). The reality of this network of agents is displayed in the extreme contexts of environmental devastation and biopolitical abuse, where exploited people, nonhuman natures, and entire habitats are crushed by the same fate that shapes the unequal sociosphere of the Anthropocene. Here we encounter the enslaved people extracting coltan in a Congo that has never ceased to be a "Heart of Darkness;" the forty thousand children that, according to estimates by UNICEF and Amnesty International, extract cobalt from African mines without any protection and who are exposed to abuse and violence; and the violence—both fast and slow—of an eternal colonialism which is invisible only to those who refuse to see it.[8] As Jared Farmer bitterly ironizes in his essay on Technofossils, "the message on the back of each iPhone—'Designed by Apple in California. Assembled in China'—could include an addendum, 'Extracted from Africa'" (2017, 192). And the picture is completed if you include the role played by such technologies in military contexts, in apparatuses of control and surveillance, and all their ripples on everyday life. It is in this complex network of forces that, post-Foucauldian political theorists maintain, lies "geopower," a power whose goal is "allowing asymmetrical planetary circulations of energy, materials, species and information to take place, ensuring that living and nonliving things are in movement but in such a way that the balance of power is preserved" (Luisetti 2018, 10).[9] And, again, there is the problem of waste: because the accumulation of un-recycled or unrecyclable electronic scraps is itself a huge socioenvironmental issue. As Farmer incisively put it, "dead media are in fact undead" (192).[10] Therefore, however unpleasant it might be, it is a matter of fact that all our cultural activities that depend on these materials and these technologies, including art, might be involuntarily complicit with such systems.

This is a poignant case with which to illustrate art scholars Heather Davis and Etienne Turpin's assumption that the Anthropocene is, literally, an "aesthetic event" (2015, 11)—namely, an event that changes our "sensorial perception" (in Greek, *aesthesis*) of the world. Dynamics like the ones that produce those monsters and ghosts—chemical pollution, climate change, mass extinctions, oceanic acidification, all the reverberation of colonialism, industrialism, petro-politics, and of course the "sphere of medianatures"—are inescapably part of our psychophysical experience. Yet, for all their character, scale, and

complexity, they escape our sensorium. This new "Anthropocene aesthetic" also has, therefore, a double face: on the one hand, we might become more sensitive to the transformations and threats we are exposed to, on the other hand we are almost "anesthetized" to the shapes they assume. These shapes might fall unnoticed or even acquire the status of a new sublime, just like the "colourful sunsets caused by particulate matter in the atmosphere, or [. . .] the aestheticized presentation of environmental destruction or explosive urbanization in the photographs of Edward Burtynksy and Vincent Laforet, respectively" (Davis and Turpin 2015, 11). Here lies all the ambivalence of the Anthropocene as an "aesthetic event": it sharpens and de-

Figure 11: Munich, Marienplatz subway station (image captured by the author)

sensitizes our sensorium all at once. It enables us to see more, feel more, perceive more, and makes us blind and insensitive at the same time.

Many questions arose during my conversation with Tamiko—a funny trilingual dialog in German, English, and Italian. The most important ones, however, remained unexpressed on that enchanted afternoon, on which I was able to see the flying objects revealed to me by her art and the Pinakothek's cloud—even in the subway station at Marienplatz (figures 11 and 12).

These questions continue resonating inside me now: Is this *mise-en-abîme* of virtual and material integral to the poetics of AR? Is an Anthropocene garden aware of its dilemma? Is it a provocation or does it conspire with these dynamics? Is this illusory immateriality just a way to disguise—one more time—the mark of our presence in this epoch that bears our name? What if the price of this exquisite immaterial experience is the wildness of this time? What are the real ghosts and monsters hidden in our gardens, and in our PCs, smartphones, and all the electronic extensions of our neogeological selves?

Thiel's Gardens are literally Anthropocenic—namely, geological—gardens. In them, everything depends exclusively on our typically human-centered use of resources. These monsters, however, also draw attention to the risks and potentials of our time. They lay bare, for example, the latent frontiers of symbiosis: our mutual symbiosis with the silica of our cellphones, the strange symbiosis that governs the dependence of the heart on the bowel. Perhaps AR art is here to stress the fact that, just as art is an episode of our natural history, the geology of media is another emergence of our evolution. And here more questions arise: How to deal with the fact that, like Thiel's artworks, this essay, which I am writing in my German apartment surrounded by lush urban parks, also comes from the same geology, the same network of "electronic waste, resource depletion, and globally unevenly distributed relations of labor" (Parikka 2015, 14) that makes the substance of the Anthropocene? What are the things—the ghosts and monsters—hidden in our own Anthropocene gardens? And what if, in order to survive in these gardens, we *do* need these ghosts and monsters?

In his volume of essays *Collezione di sabbia* (*Collection of Sand*—a title that resonates very well with the silica and stones we are evoking), Italo Calvino devotes an entire section to Japan. Japanese gardens, in particular, attract his attention. In an essay titled "Il rovescio del sublime" ("The reverse of the sublime") the garden is described as the quintessence of human-made perfection, a self-sufficient spot where artifice must be visible in every detail.[11] Nature—qua spontaneous creativity—is *graciously* corrected and accompanied in these exquisite places where everything "has to seem spontaneous

and for that reason everything is calculated" (Calvino 2013, 161). From stones to sand to trees to wooden temples, subject to their "natural" decay: all is perfectly planned and curated. To use the famous words of Alexander Pope, here, literally "all Nature is but Art." This generates a landscape without chaos, a landscape where the sublime, far from coming from the disproportion between our finitude and the powerful greatness of the elements, originates from the transcendental geometry of its forms.

Here too, however, the sublime comes at a price. As he muses about the sublimity of these places, Calvino fulminates over the observation of a Japanese student who accompanies him. In his sober Italian, the student asks: "Do you like all this?" and adds: "I cannot help thinking that this perfection and harmony cost so much misery to millions of people over the centuries" (164). Calvino's response is at once bitter and historically lucid:

> But isn't the cost of culture always this? . . . Creating a space and time for reflection and imagination and study presupposes an accumulation of wealth, and behind every accumulation of wealth there are obscure lives subject to labour and sacrifices and oppression without any hope. Every project or image that allows us to reach out towards another way of being outside the injustice that surrounds us carries the mark of the injustice without which it could not have been conceived. (165)

This cycle of culture and injustice materializes when the visitors arrive at a bed of stones, all perfectly harmonized in shape and color—impeccably oval, flawlessly smooth, bright grey and dark grey. These pebbles, the guide explains, came here in the seventeenth century from every corner of Japan. Each bag of stones was repaid by the Emperor with a bag of rice. Calvino writes:

> We seem to see the queue of peasants conjured up by those words bent double under the bags of stones, snaking across the little bridges and paths. They deposit the loads they have carried from distant regions in front of the Emperor, who examines the stones one by one, places one in the water, another one on the side of the lake, and rejects many others. Meanwhile the attendants busy themselves round the scales: on one dish there are stones, on the other rice. . . (165)

This is the dark side, the reverse of the sublime: the fact that, behind each garden, the map of planetary extractivism is hidden—the extractivism of both human and nonhu-

man resources, with their networks of crises, conflicts, and biopolitical predicaments. And here, perhaps, Calvino was also thinking about the dynamics affecting the Ligurian landscape around his own garden at Villa Meridiana, an experimental botanic station where his scientist parents lived and did their research—themselves witnesses of the transformation of a native ecosystem on the verge of becoming more and more engrained in the growing ecology of globalization. The forced transformation of that rugged and uneven territory into an industrial garden for the production of flowers (mostly carnations) turned the botanically rich and morphologically diverse land into a monoculture, as Calvino narrates in *The Road to San Giovanni* and in other prose.[12] This very landscape would later become a continuous city of "cementified" parks for speculators and tourists, which he very lucidly described in his clairvoyant novel *A Plunge into Real Estate* (1957). As many of his works reveal, within the new, attractive sceneries, whose monstrosity we are not able to perceive, eloquent ghosts of people and natures are hidden: servants, the poor, women, soldiers, nonhuman animals, the land, and infinite other more-than-human beings. They, too, are the reverse of the sublime. Yet, we do need to see these ghosts. Their presence is a story embedded in this landscape like the stories of coevolution we have now lost or forgotten. Art helps us to see these ghosts and recognize these monsters—whether embodied in AR installations, or in a Japanese garden. In doing so, it can help us recreate these lost memories, even if it comes at the cost of adding more layers to the monstrosity. This is indeed a dilemma, but it is the dilemma on which civilization is based. And so, if the Anthropocene is an "aesthetic event," art and culture must find a way to wake us up from the anesthesia and sharpen our perception of the predicaments that make our being-in-the-world. This might produce more costs now, but it might also be conducive to a world in which the awareness of the unjust will be in-built in the fabric of our biopolitical values, actions, and visions.

Calvino's and Thiel's works are powerful examples of how thinking the garden and the Anthropocene with one another—through one another—is important for illuminating the epoch in which we are living. But here, one thing must be stated clearly: thinking the garden and the Anthropocene *through* one another does not mean equating them with one another. Although they might fit into a similar framework, gardens and the Anthropocene are not exactly the same. In fact, despite all its contradictions, the garden also discloses unexpected resources. Re-situated in the problematic landscape of our epoch, and rethought as a figure, a place, and a practice, it can indeed become a symbol of resistance to the Anthropocene. The theorist of the "Planetary Garden,"

Gilles Clément, has coined the expression "*jardins de résistance*," "gardens of resistance" (Clément, undated). These gardens, Clément maintains, are places where biocultural diversity, interdependence, and creativity—both natural and technological—can thrive. Gardens of resistance are the landscapes of "a life style that, in a larger sense, reflects the relation-

Figure 13: Image of Tamiko Thiel's *Wild Garden* installation at Munich's Pinakothek der Moderne (image captured by the author)

ship" between humans and their "sociobiological environment" (Clément, undated).[13] I have written this essay in Munich, the city with one of the biggest urban parks on the planet: the *Englischer Garten* (375 hectares). Founded in 1789 by Karl Theodor of Bavaria and developed by the *Hofgärtner* Friedrich Ludwig von Sckell, who drew inspiration from the aesthetic of "free nature" developed in England by Lancelot "Capability" Brown, the English Garden was meant to become a garden for the entire population, a collective shared space of urban ecology. There are gardens available everywhere to everyone, in Munich. Even the "social institution" of the city, the *Biergarten*—first established here in 1812 by decree of King Maximilian I—is an ideally democratic way to take the garden outside class enclosures and deliver it to the urban population, making it accessible and transforming it into an affordable place for sharing and conviviality.[14]

Of course, these gardens have an environmental impact, but their positive influence on people's lives and on the health of urban ecosystems is evidently more significant than the costs. The same applies, even though differently, to Turin's PAV: it is an oasis, but an oasis for the entire city, where educational projects, an ecopolitical vision, natural-artistic cocreativity, and the existence of a unique natural-cultural ecosystem—in which even Gilardi's polyethylene sculptures belong—constitute an opportunity for *actively* rethinking the Anthropocene. In these gardens, with all these natural and technological things together, are ways to re-trigger modes of flourishing in the midst of a world of wounds. Gardens—along with art, and all the "resistant" ways of being they host and inspire—therefore become modes of turning all the Anthropocene wounds into signs, transforming them into narra-

tives that can be read, shared, and that, after everything, are still open to being rewritten. This is why gardens are so important in the Anthropocene: they are one of the last presidia of the Holocene—as we know from the famous example of Gezi Park in Istanbul, where the threat to destroy an island of flora and fauna in order to make room for yet another shopping mall and another waterfall of concrete disguised under the slogan "Justice and Development" (the name of Erdogan's party) provoked riots and an upsurge of thousands of citizens. The urban revolt is a way to "Occupy the Anthropocene" (Armiero 2015), rethinking the garden as a coalition of humans, flora, and fauna *through culture.*

If the price we pay for culture is hidden behind the sublime, perhaps we might use culture as well—and the garden—to turn upside down what we recognize as a threat to our more-than-human coalitions. Be it Munich's English Garden, Istanbul's Gezi Park, Turin's PAV, and even Tamiko Thiel's *Anthropocene Gardens* and the Japanese Zen gardens visited by Calvino: we need gardens of resistance. Despite being an expression of our inescapable humanism, culture can indeed suggest a postanthropocentric strategy, something we can use to plan gardens of resistance and not of destruction, gardens of memory and not sites where the future is only an externality for our excesses. Because, after all, humans and gardens—like the humanities that nourish our discourses and visions, the humility we need to survive on a wounded planet, and even the Anthropocene as the age of the human—all go back to a common root: *humus*, the earth.

1 On Gilardi's aesthetics and his biopolitical program, see Gilardi, *La mia biopolitica* (2016). On his "ambiguous" use of artificial materials, Hou Hanru writes: "Gilardi tends to choose to incorporate industrial products and technologies in his work in order to explore the possibility of transforming nonconventional materials into elements used to construct, or invent, a new nature, an artificial environment that, on the one hand, recalls the images of natural creatures who [sic] risk becoming extinct, and, on the other hand, provides us with a new 'natural life' [. . .]. This leads to 'nature that is reinvented' and involves direct interactions with social and economic relations in real life" (Hanru, 2017, 55–56).

2 In her essay about gardens, the Anthropocene, and depression, Sandilands writes: "Loss connects us in ways that plenitude does not; in this respect, depression in the Anthropocene demonstrates a vulnerability to loss that also lies at the heart of renewed multispecies communities, ethical commitments, and forms of attachment that are not satisfied by diminished replacements. In order to mourn we must love; in order to love, I think, we must mourn" (Sandilands 2017, 165).

3 An interesting account of her career as an artist as well as a young physics student at Stanford is available in "A Conversation with Tamiko Thiel" in this issue.

4 The scientific premises of Thiel's artwork are accurately summarized in "*Gardens of the Anthropocene: Project Background*" (Thiel 2016).

5 The whole issue, including the Creative Writing and Art section, edited by myself, deserves closer consideration.

6 The actual author of this sentence, from the fragment *Die Natur*, is the Swiss theologian Johann Christoph Tobler (1757–1812). For many years, it was mistakenly ascribed to Goethe, who nonetheless espoused its spirit. See Murray (2004, 792).

7 See for example Cubitt (2005 and 2017); Rust, Monani, and Cubitt (2016); Zielinski (2006); and Parikka (2014 and 2015). Also interesting is Parham (2016). On technology and the Anthropocene, see also Trischler and Will (2017).

8 On child laborers in Congo mines, see Walter (2012) and Kelly (2016).

9 A mandatory reading on geopower is anthropologist Elizabeth Povinelli's *Geontologies* (2016).

10 See for example the US EPA report "Cleaning Up Electronic Waste (E-Waste)." On the problem of waste, see also the *RCC Perspectives* issue "A Future without Waste?" edited by Christof Mauch (2016).

11 I am proposing here a more literal rendering of Calvino's Italian title, translated by Martin McLaughlin as "The Obverse of the Sublime."

12 See for example "Liguria magra e ossuta" ("Skinny and boney Liguria," 1945) and "Liguria" (1973) in Calvino (2001, volume 2, 2363–70 and 2376–89, respectively). On *The Road to San Giovanni,* see *Scarpa* (2005).

13 By Gilles Clément see *"The Planetary Garden" and Other Writings* (2015). Clément is famous for his "Third Landscape Manifesto," part of which is available on his website in English (2003). On AR and Third Landscape, see Iaconesi, Simeone, and Hendrikson (2011).

14 On the *Englischer Garten* as a "people's garden," see Papillion-Piller (2000). On its history, see Dombart (1972). On *Biergärten* see Gattinger (2015). For a short yet accurate historical overview, see also the German-language Wikipedia entries for "Englischer Garten (München)," "Biergarten," and "Liste der Biergärten in München" online.

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A Conversation with Tamiko Thiel

After so many solitary questions, I decided to bring Tamiko directly into the conversation. My purpose was not so much that of looking for the right answers, but simply quitting the loneliness of my musing, opening with her a common space of thinking. With the playful and gentle happiness that characterizes her creative work, she accepted. This time, however, I was back in Turin. And so, ironically, after so much writing about "medianatures" and the "materiality of the cloud," our space of co-thinking was a virtual one, made of e-mails, websites, and computer files. Here is what we launched in cyberspace.

> **Serenella:** Let me start from the beginning. Your art is an emanation of your scientific education—an education that took you from physics to media art. How about sketching a portrait of the artist as a young woman of science?

Tamiko: As with so many people working in media art, the question of whether to go into science or art was a constant one. At Stanford I tried both art classes and physics classes—and worked as a student at the Stanford Linear Accelerator Center (SLAC). Art in the mid-1970s (at least as taught at Stanford) was still very much "art for art's sake," and did not engage with the real world in any way. In contrast, in high-energy physics they had just discovered quarks, and my freshman seminar was titled "The Ultimate Nature of Matter"! Physics seemed so much more exciting, and so much more connected with the real world and with real life.

Slowly, however, I realized that I was never going to be a Nobel physicist and started looking for a major that would really fit my abilities. I discovered the Stanford Product Design program, one of the very few programs at that time that combined technology, art, and design. There I received strong mentorship from founder Bob McKim and my advisor Larry Leifer. After graduation, I worked designing computer terminal housings at Hewlett-Packard—also, by the way, with wonderful mentoring from my boss—but soon got bored. My friends, especially at Xerox PARC and Apple, seemed to be doing exciting, groundbreaking work, but their type of work didn't interest me. I went to MIT to do graduate work in mechanical engineering, looking for something that might finally engage me. But I soon discovered the precursors to the Media Lab—the Architecture Machine Group and Visual Language Workshop—and ended up taking

half of my classes in those departments. I also took painting and drawing classes with the painter Dick Stroud at the MIT Student Art Association, an artist who really melded his art and his life into a single whole. These two sources were the inspiration I had been waiting for, and I decided at that point that media art would allow me to combine my love of technology and art, and allow me to incorporate everything I did in life into my art.

Before I could act on that, however, my friend Danny Hillis from Marvin Minsky's MIT Artificial Intelligence Lab asked me to do the product design for his new invention, the Connection Machine: the first commercial, massively parallel supercomputer with a computer architecture inspired by the human brain. The machine would cost over $1 million and therefore I shouldn't worry about the cost of the package—it should just look amazing and convince people on sight that this was a completely new species of supercomputer, a machine that we could be proud of. "And," Danny added, "you get to work with Richard Feynman, the Nobel physicist!" Richard was one of my heroes, of course, and I signed up on the spot. I spent the next two years thinking about what computers meant to us geeks, what imagery arose from science fiction to form our conceptions of computers, and what dreams for the future fueled the search for artificial intelligence. Danny, Richard and his son Carl, and Brewster Kahle (who went on to found the Internet Archive) communicated to me their own dreams of what the machine could be, and I describe the process and the result in my article "The Design of the Connection Machine" (Thiel 1994).

> **Serenella:** Speaking about the Connection Machine, let me remind the readers of this conversation that in 2016, based on the reception of your article, you were able to get one of the few remaining CM-2s into the permanent collection of the Museum of Modern Art in New York. There were also accounts that the machine had significantly inspired the visible change in Steve Jobs's design aesthetics between his earliest Apple products, and the NeXT Cube and his subsequent products. . . (Schwab 2016).

Tamiko: Exactly—but this came much, much later! Back in 1985, after the design phase was finished, I realized I had no interest in taking the machine into production. I made a full break, moving to Europe to go to art school. After several years of drawing, painting, and working with found objects, I began working with video (the

"media art" of the time in the late 1980s) and then, landing in San Francisco in 1994, began working with virtual reality (VR)—interactive 3D computer graphics. I was the producer and creative director of the online multi-user virtual world for seriously ill children, Starbright World, in collaboration with Starbright Foundation chair Steven Spielberg.[1] The technology that had remained within the exclusive territory of elite computer graphic labs had evolved to the point that it could run on mere PCs instead of requiring hundred-thousand-dollar workstations. I saw VR as the chance to create *Gesamtkunstwerke*, in which I could create entire virtual worlds! I created three large virtual worlds, all focused on social themes—internment of minorities in times of crisis, an Asian view of the exotic Western Other, the Berlin Wall as a fortified military zone in the middle of a city. Then, in 2010, an invitation from a friend, Mark Skwarek, to join an augmented-reality intervention in the Museum of Modern Art in New York transformed my practice from site-specific virtual reality, in which I first had to rebuild an entire city-sized area into site-specific augmented reality, in which I merely used an existing location as the environment for my artwork.

> **Serenella:** From artistic environment to environmental art activism: this apparently is your parable. When did environmental concerns and climate change enter your art and agenda?

Tamiko: Environmental issues surfaced early in my augmented reality (AR) practice; perhaps my second AR work, after "ARt Critic Face Matrix" at MoMA New York, was "Newtown Creek (oil spill)" (2011), on an extremely polluted but almost invisible river that forms the border between Brooklyn and Queens.[2] Perhaps it was the ability of AR to make the invisible visible that inspired many of my environmental art pieces. My work "Clouding Green" (2012) floated clouds over Silicon Valley's major cloud-services providers, in colors ranging from sooty black to brilliant green, depending on the percentage of renewable energy used by their cloud services.[3] "Biomer Skelters" (with Will Pappenheimer) and "Water Lily Invasion"—both in 2013—were then the first pieces that explicitly referenced climate change. I had always admired the Japanese art of Ikebana flower arranging, a form of sculpture using natural materials, and found modeling plants in 3D computer graphics a very enjoyable way to play with rather abstract sculptural forms—forms that I can "mutate" in whatever way I choose. This artistic pleasure, coupled with my rising sense that climate change really was becoming a dire threat to all of humanity, is perhaps the reason why I have been focusing

more and more on using plants (and now the very abstract coral animals of "Unexpected Growth"[4]) to point out the absurdities of survival into the coming Anthropocene.

> **Serenella:** One of the most frequently recurring topics of "Anthropocene art" (if this category exists) is the apocalypse—worlds emptied of their inhabitants, fragments of past lives, shipwrecks and relics, a reality in ruins. You, in turn, populate this reality with critters, which share a common feature: they are all nonhumans. Yet the human is in the background as a vanished force whose ripples continue to affect reality. The very idea of a garden is human, although humans are not at home in your gardens. But is it really so? What is behind (and within) your alter-natural gardens?

Tamiko: You are correct, there is little or no place for humans in my Anthropocene gardens. I have great confidence that the earth will survive us as a species—but we are destroying the life we have known and cherished during the mere two hundred thousand years of our existence on this planet, and when we have destroyed that life, there will be nothing to sustain humans either. My mutant plants and creatures point to the absurdity of the sorts of changes they would have to go through to survive the world we are creating. If our species becomes extinct, it will be because we were not wise enough—despite our self-proclaimed name, "homo sapiens"—to maintain an earth that could support our own unique life form. But indeed, the force of our changes to the environment will affect all other life forms and extend for hundreds of thousands of years.

> **Serenella:** This brings us directly to your most recent AR installation, *Unexpected Growth*, hosted by the Whitney Museum of New York from late September 2018 to mid-April 2019. Here, the agency of human visitors and their devices is, in fact, an essential "intra-active" component of the artwork. Would you like to say something more about it?

Tamiko: *Unexpected Growth* puts the sixth-floor terrace of the Whitney Museum underwater due to rising sea levels, and you encounter a coral reef composed of plastic waste that has formed on the terrace. Depending on how many people view it on their smartphones every day, the corals will bleach. Thankfully, they can rest overnight and regain their color—but if they have no rest, as is happening more and more with the ocean's corals, they will die and remain bleached.

I love the life we can lead today; I revel in the mobility and connectivity that our networked and always-online lifestyles enable. But I also love the natural world that we are destroying with our high levels of consumption, of which our beloved smartphones are a part, and want my visitors to realize that we are all implicated and have agency in the changes that we are making to our planet. The media can only keep an issue in the headlines until the next catastrophe comes along. I believe that artists, even if we do not have the instantaneous reach of a media headline, can take an issue and, by continuing to shake it and poke at it and engage the public with it, can keep it in the public eye in a deeper and more personal way than a single headline can do.

I want to expand my website for *Unexpected Growth* with links to the issues of plastic waste and global warming, but have hesitated until now because I found only websites of doom and gloom. I wanted to be able to take any energy my exhibit generates and direct it to become a force for positive change, not for despair. Recently I have found sites that seek to mobilize people to force politicians and corporations to make the changes necessary to save our planet from this worst-case scenario that we are now steering towards; groups such as the youth-led Extinction Rebellion and the Ellen MacArthur Foundation, with its global focus on engaging corporations and governments to reduce plastic waste.[5]

> **Serenella:** Your *Gardens of the Anthropocene* have been eradicated from Seattle, but perhaps some mutants—and not artistic ones—are already part of the Anthropocene flora…. As you reminded me in a previous conversation about your "Giant Red Algae," Florida has been dealing with a red tide for over a year because the governor had revoked clean water standards (see, for example, the reports by National Ocean Service 2018 and Nemo 2018).

Tamiko: Yes, actually these are just the normal red tides that would come once in a while, but now come with increasing frequency and/or become very persistent or even chronic. When major catastrophes only come every 10 years, we can deal with it and recover from it. What do we do when the major catastrophes come every year, or a couple of times a year? What will Florida do if the red tide never goes away, turning its beaches into poison zones?

Serenella: This is indeed the visible price that societies pay for the mismatch between politics and environmental emergencies. Speaking about price, one of the leitmotivs of this essay is the invisible costs of our Anthropocene gardens—a category that can include all cultural forms that are dependent on socionatural exploitation. I cannot resist the temptation of asking you one of the same questions I asked myself while I was writing: how does the ambiguity of an art that, politically, is meant to "save the planet" but that, materially, depends on the same mechanisms it criticizes, enter your work? How do you deal with the dilemma of the Anthropocene garden?

Tamiko: I addressed this question further above, but I would also like to cite a positive example I discovered when reinvestigating one of my early environmental AR installations, "Clouding Green" (2012). In this work, where clouds floating over Silicon Valley's cloud service providers were colored depending on the amount of renewable energy the services used, I took numbers based on a Greenpeace survey from 2012 called "How Clean is my Cloud?" (Cook 2012). Greenpeace now reports that some of the corporations investigated in 2011 have actually improved dramatically in the last seven years (see Miller 2017, and Greenpeace's current website ClickClean). When I was an engineering undergraduate at Stanford in the mid/late 1970s, we wistfully regretted that solar energy and other renewable energy sources were not technically and economically feasible—now they are set to become cheaper than fossil fuels, and it really makes sense to press for the elimination of fossil fuels as an energy source (see Leary 2018). So technological change can help us, if the political will is there.

The issue of the materiality of the smartphone, and the dangerous and poisonous ecosystems it creates in its wake, is yet another disheartening example of the way in which we separate ourselves in a clean and shiny bubble and shove our extractive and noxious industries off to other lands. This is another question I have yet to investigate. Can we separate our love for technological gadgets from our exploitation of the rest of the world? In the realm of ocean-borne plastic waste, since China has stopped accepting our waste to recycle it, we will have to deal more and more with the full life cycle of the products we consume. If we can develop reasonable solutions, and help China, Indonesia, and other countries implement them, perhaps we can reduce the huge volume of waste we dump into the ocean every day.

Serenella: So, to conclude: How immaterial is our reality, and how material is our virtuality, Tamiko?

Tamiko: I always ask my students: What is the difference between "real" and "immaterial?" Love is immaterial—does that mean it is not real? According to the Oxford English Dictionary "real" means: "Actually existing as a thing or occurring in fact; not imagined or supposed."

Serenella: And the pleasure of talking with you, Tamiko, was also real. Thank you for your time, another immaterial but also very real thing! And thank you for this conversation: I am sure it will continue, possibly in a less virtual way, one not mediated by cables or clouds.

Tamiko: I hope so, too! Many thanks for your thoughts, Serenella.

"Gardens are perhaps the last reminder to the city-dweller of what we lose when we kill all of nature," Tamiko wrote to me in one of her e-mails. I wish I could have joined her for a walk in the *Englischer Garten.*

1   See http://tamikothiel.com/starbright/.
2   See http://tamikothiel.com/AR/newtown-creek.html.
3   See http://tamikothiel.com/AR/clouding-green.html.
4   See http://tamikothiel.com/unexpectedgrowth/.
5   See their respective websites at https://rebellion.earth/ and https://www.ellenmacarthurfoundation.org/.

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About the Author

Serenella Iovino is Professor of Italian Studies and Environmental Humanities at the University of North Carolina, Chapel Hill. A research fellow of the Alexander-von-Humboldt Foundation and a past President of the European Association for the Study of Literature, Culture, and Environment (EASLCE), she was a Rachel Carson Center fellow in 2017–18.

Serenella has written on a wide range of topics, including environmental ethics and ecocritical theory, bioregionalism and landscape studies, ecofeminism and posthumanism, comparative literature and environmental humanities. Her recent publications include *Material Ecocriticism* (Indiana University Press, 2014), *Environmental Humanities: Voices from the Anthropocene* (Rowman & Littlefield, 2017) (both co-edited with Serpil Oppermann), and *Italy and the Environmental Humanities: Landscapes, Natures, Ecologies* (University of Virginia Press, 2018, co-edited with Enrico Cesaretti and Elena Past). Her last monograph, *Ecocriticism and Italy: Ecology, Resistance, and Liberation* (Bloomsbury, 2016) was awarded the Book Prize of the American Association for Italian Studies and the Modern Language Association's Aldo and Jeanne Scaglione Prize for Italian Studies.

For millennia, gardens have been a medium with which to redeem nature from its ever-impending chaos. They play a key role in the survival strategies that art and culture can offer during the "age of the human." Yet not all these strategies are the same: some of them, in fact, conceal forms of wildness or disorder that are rooted in systems of social oppression, resource exploitation, and the disruption of planetary cycles. Taking her cue from an encounter with the Augmented Reality artist Tamiko Thiel and her eco-activist works, Serenella Iovino uses the garden as a lens to analyze the impacts of old and new forms of aestheticizing nature on the geology of our planet. Iovino focuses on landscapes of power and depletion, but also the creativity and possibility that are emerging from places of resistance.

The essay is followed by a conversation with Tamiko Thiel.